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# AUTOMOTIVE INDUSTRIES

## The AUTOMOBILE

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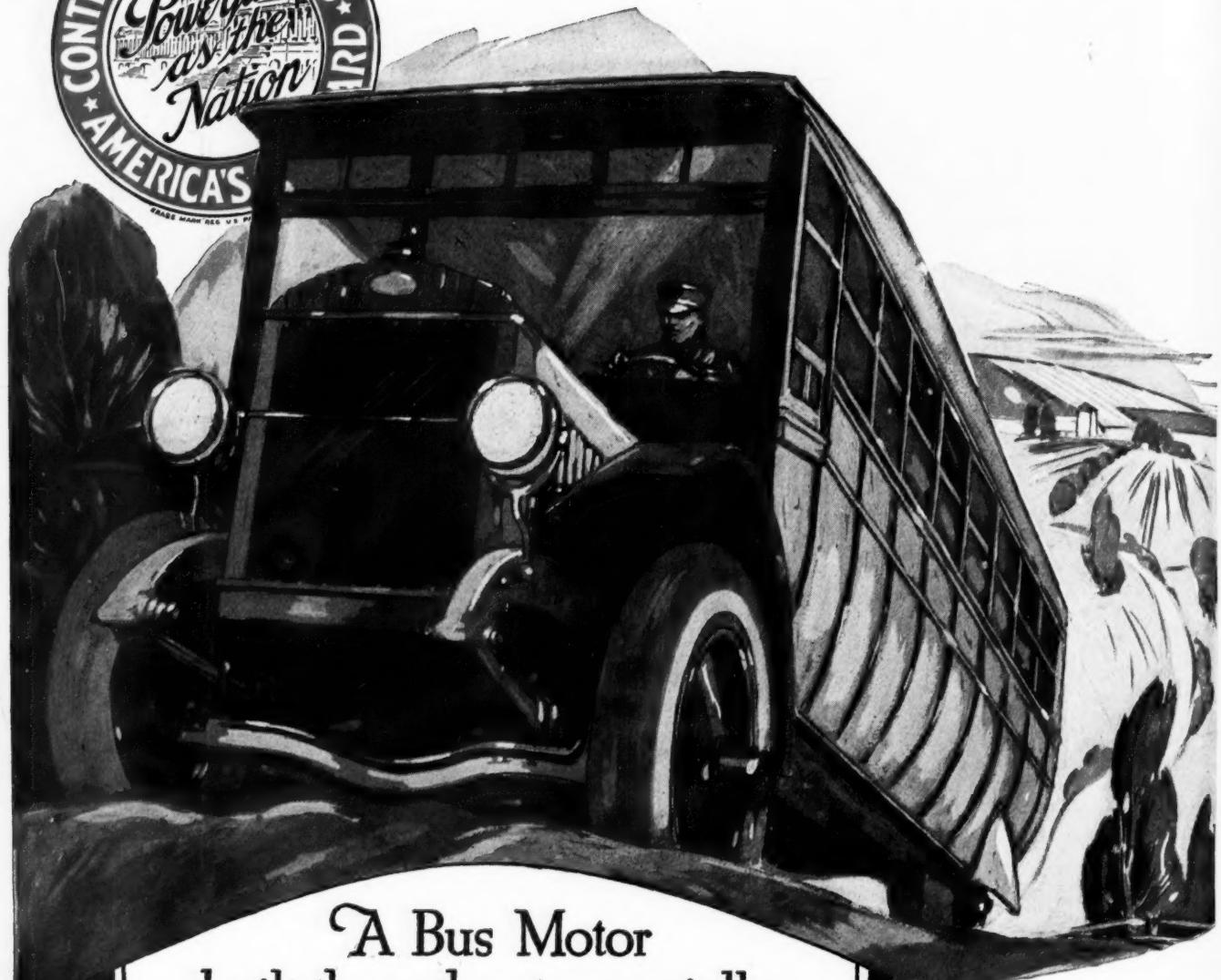
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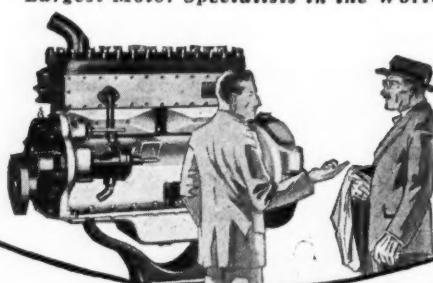
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- Gasoline pump
- Governor
- Three to six foot air-pump
- Oil strainer

Continental Motors will be exhibited at the New York and Chicago Automobile Shows and at the Good Roads Show at Chicago.

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# AUTOMOTIVE INDUSTRIES

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NEW YORK—THURSDAY, DECEMBER 4, 1924

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## Freight Rate Changes May Cost Industry Millions

*Revised schedules now being proposed by carriers would increase tariff on automotive products. Eastern parts makers may be hard hit. Hearings begin February 4.*

By Norman G. Shidle

THE automotive industry will be called upon to pay out millions of dollars in additional freight rates if new schedules now being proposed by the carriers are approved by the Interstate Commerce Commission. The parts manufacturers most directly affected would be those in New England and New York since the changes advocated have to do chiefly with eastern trunk line territory. Since the products made by these eastern firms are used extensively in the Middle West, however, the vehicle manufacturers, as well as the parts makers, will help to pay the bill if the new rates go through.

These are some of the important conclusions to be drawn from an interview with Herman Deuster of M. A. M. A., chairman of the committee recently appointed by the N. A. C. C. Traffic Managers Conference, to investigate the carriers' rate proposals. The committee has been functioning for only a short time, and up to the present has not come to definite conclusions as regards details of the changes. Sufficient study has been made, however, to show clearly that the proposed rates would add a heavy freight charge burden to manufacturers of automotive products.

THE situation is particularly interesting in view of the fact that the events which led the carriers to propose these rate revisions had nothing whatever to do with need for increased revenues. The changes advocated really had their genesis in the 4th section of the act creating the Interstate Commerce Commission—well known to every traffic man—which provides that rates for any given haul cannot be higher than rates for longer hauls unless approved by the commission.

Many cases existed contrary to this ruling when first it went into effect. Consequently the carriers compiled a list of these exceptions and filed them with the Interstate Commerce Commission asking for special permission to continue them. The Commission granted a blanket permission for continuance of such rates as were in force at that time, fourteen years ago.

Further violations of the 4th section came into being at later dates and the class scale question finally was brought to an issue last April when the eastern trunk lines undertook to justify their disregard of the long-and-short haul part of the 4th section, under the 4th section applications which they had filed fourteen years previously. The Commission denied their petitions to continue violations of the fourth section.

THEN the carriers stated that it was necessary to revise completely the present rate structure in the eastern territory. The Interstate Commerce Commission asked them to prepare proposed revisions; which they have done.

In announcing that the first hearing in this investigation will be held at Washington, beginning Feb. 4, 1925, Joseph B. Eastman of the Interstate Commerce Commission states specifically that "it will not be the primary purpose of the inquiry either to add to or subtract from the aggregate revenues of the carriers, but rather to adopt a class rate structure which will be as simple as it can be made, with due regard for the public interest and free from undue prejudice, and which will serve the purpose that class rates ought to serve."

"This will not mean," he continues, "that class

rates will be rejected upon the ground that they increase or decrease aggregate revenues."

Thus it appears that no question of railroad revenues should be involved in the discussion of the proposed rates and that the primary objective is to bring rates in line with section 4, and to get a set of schedules which will adjust the inconsistencies which many communities believe to be inherent in the present rates.

It may be noted in passing that the Gooding Bill, which was presented before the last Congress, and which will come up again in the near future, provides that a higher rate for a shorter haul shall not be permitted under any circumstances whatsoever. Discussing the bill, Mr. Deuster says that he finds a majority of shippers opposed to its passage, since most traffic men realize that there are very sound reasons for the existence of competition at many points without a breaking down of rates in the intermediate territory. Mr. Deuster thinks that even under the proposal submitted by the carriers, 4th section violations will have to be permitted in certain instances.

#### Manufactured Products Will Suffer

The new schedules being proposed by the railroads have the general effect of increasing rates on manufactured products and of decreasing them on raw materials. This is in line with a suggestion made some time ago by Secretary of Commerce Herbert Hoover, that farm relief might be facilitated by some such adjustment of railroad rates. The Hoover idea has not met with anything like universal approval even among those whom it was designed to benefit.

Commenting editorially on this statement and on the Hoover suggestion in general *The Traffic World* concludes by saying that "As in customs tariff matter, rate men know that what is a basic commodity for one man is a finished product for another. Voltaire's basic rule requiring definition of terminology apparently was not followed when the theory of higher rates on valuable merchandise and lower rates on basic commodities was fabricated."

It is too early to form definite conclusions as regards either the justice of particular rates proposed or as to the exact effect which the new schedules would have on shaping the future of automotive manufacturing and merchandising. The changes proposed, however, are great enough in some cases to have a very material effect on certain manufacturers, particularly those in the east.

The new schedules would tend to eliminate the condition which now exists under which it is possible for certain products to be shipped from Albany to Detroit just as cheaply as from Buffalo to Detroit.

The total increase in freight rates to be paid by the automotive industry cannot be calculated in advance, of course, because the level of freight rates determines to a certain extent the volume of products shipped.

The committee headed by Mr. Deuster, however, already has made some specific investigations which show in detail the added costs which would accrue under the new rates to certain quantities of particular items. These show very clearly what the proposed rates would mean to the industry. Here are some concrete examples:

#### Bodies from New England

- To Detroit, increase, \$9.50 per car of 10,000 lb.
- Flint, increase, \$11.00 per car of 10,000 lb.
- St. Louis, increase, \$14.50 per car of 10,000 lb.

#### Electric Starters from Springfield, Mass.

- To Cleveland, increase, 13½c. per 100 lb. L. C. L.  
(No increase in C. L.)
- Detroit, increase, 14½c. per 100 lb. on L. C. L.
- Flint, increase, 16½c. per 100 lb. on L. C. L.

South Bend, increase, 18c. per 100 lb. on L. C. L.  
Chicago, increase, 19c. per 100 lb. on L. C. L.

#### Plush, velour and cloth for upholstering closed cars from New England

- To Cleveland, increase, 13½c. per 100 lb.
- Detroit, increase, 14½c. per 100 lb.
- Flint, increase, 16½c. per 100 lb.
- Kenosha, increase, 19c. per 100 lb.
- St. Louis, increase, 22c. per 100 lb.

#### Brake lining from Bridgeport, Conn., or other New England point

- To Cleveland, increase, 9c. per 100 lb., L. C. L.; \$27 per car of 30,000 lb. C. L.
- Detroit and Toledo, increase, 9½c. per 100 lb., L. C. L.; \$31.50 per car of 30,000 lb.
- Indianapolis, Ind., increase, 11c. per 100 lb., L. C. L.; \$36 per car of 30,000 lb.
- St. Louis, increase, 14½c. per 100 lb., L. C. L.; \$48 per car of 30,000 lb., C. L.

#### Gears or transmissions from Syracuse, N. Y., increase as follows:

- To Cleveland, 13½c. per 100 lb., L. C. L.; \$10.50 per car of 30,000 lb., C. L.
- Detroit, 10c. per 100 lb., L. C. L.; \$7.50 per car of 30,000 lb., C. L.
- South Bend, 16c. per 100 lb., L. C. L.; \$10.50 per car of 30,000 lb., C. L.
- St. Louis, 18c. per 100 lb., L. C. L.; \$12 per car 30,000 lb.

On shipments of automobiles to New York, which load on an average of about three machines to a car, the rates will be increased as follows:

- From Detroit, \$16.00 per carload or \$5.33 per machine.
- From Flint, \$18.00 per carload or \$6.00 per machine.
- From South Bend, \$20.00 per carload or \$6.67 per machine.

From Kenosha, \$21.00 per carload or \$7.00 per machine.

From St. Louis, \$25.00 per carload or \$8.33 per machine.

Mr. Deuster says that the industry is opposed to any general increase on automotive products and points out that the carriers' suggestions already have been opposed by shippers organizations in several places. A meeting of shippers in Chicago, on Nov. 13, for example, cited nine reasons for their opposition to the suggested schedules. Some of these objections go into considerable technical detail, but the second and eighth are of general interest. The second one reads:

"The present interterritorial rates are generally higher than reasonable rates when measured by the carriers' own standards as contained in the intraterritorial scales proposed in this same proceeding."

The eighth objection states:

"The order of the Commission announcing this investigation clearly states that it is instituted for the purpose of bringing the class rates into conformity with the Fourth Section and, obviously, this is the only justification which the carriers have for proposing changes at this time in the overhead or interterritorial rates, but so far as we are able to determine, the proposal as to interterritorial rates does not accomplish this purpose. Therefore, the proposal is not in keeping with the letter or spirit of this investigation."

Objections from shippers in other parts of the country follow similar lines in many instances. The scope of the changes proposed in rates affecting automotive products is so great as to involve literally hundreds of thousands of dollars annually and consequently is worth whatever time and effort is necessary on the part of the industry and its representatives to see that automotive products receive fair treatment along with other commodities.

# New Buda Six Cylinder Engine Designed Especially for Bus Service

*Aluminum crankcase extends some distance below crankshaft axis for increased rigidity. Special attention given to balancing of moving parts. Both crankshaft and camshaft have four bearings.*

By Donald Blanchard

A SIX-cylinder engine designed specifically for use in the bus field is now in production by the Buda Company of Harvey, Ill. It has a bore of 4 and a stroke of  $5\frac{1}{8}$  in., giving it a displacement of 386.4 cu. in. and a standard rating of 38.4 hp. Heavy-duty service, as in interurban work, has been particularly kept in view by the designers.

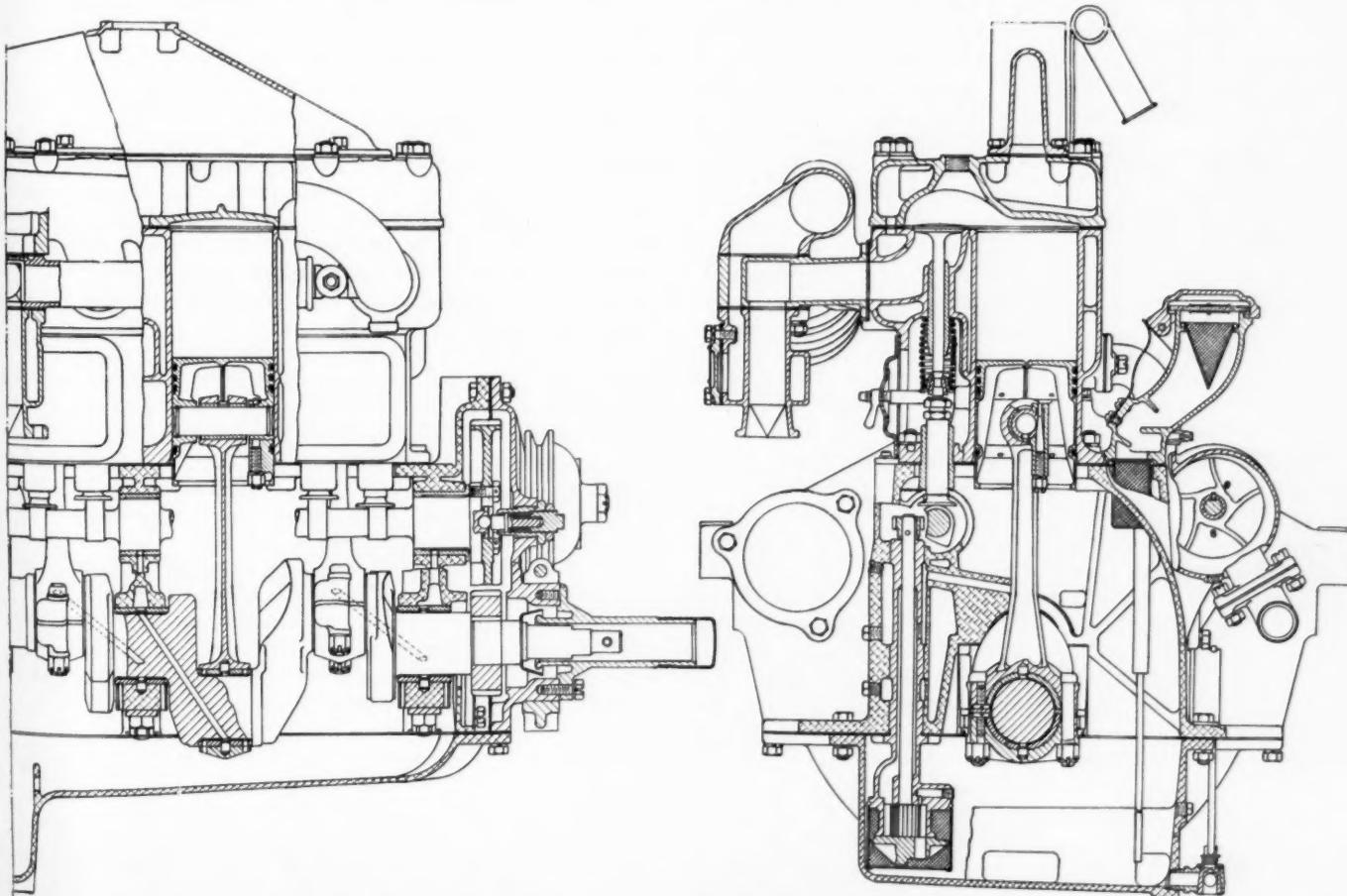
The cylinder block is a gray iron casting with ample water jacket space around all cylinders, barrels and valves. The detachable head, which is also a gray iron casting, is secured to the block by alloy steel studs. Above the combustion chambers there is a large water space which tapers toward the outlet water header attached to the top of the cylinder head casting. This construction assures a free flow of cooling water. Pry lugs are provided on the ends of the head so that it may be removed without damage to the gasket.

The crankcase and upper part of the flywheel bell

housing form an integral aluminum casting, as do the lower portion of this housing and the oil pan. The crankcase is reinforced and filleted at points of greatest stress, and additional rigidity is secured by extending it  $3\frac{1}{2}$  in. below the center line of the crankshaft. Provision is made to drain the oil pan by means of a cock which is operated from above. The oil level gage is of the bayonet type.

## Four-Bearing Crankshaft

The crankshaft is a heavy steel forging, heat treated to secure an elastic limit of 85,000 lb. per sq. in. On its rear end two oil thrower rings are machined. It is supported in four bronze-backed, babbitt-lined bearings which are secured in their seats by steel dowels located centrally and by two fillister head screws which draw the bearing halves into place by pressure at the split edges of the bronze backs.



Sectional views of Buda six-cylinder bus engine

The four main crankshaft journals and the crankpins are all  $2\frac{1}{2}$  in. in diameter. The front, and intermediate main bearings, and the connecting rod bearings are all of the same length,  $2\frac{1}{8}$  in. The rear main bearing is  $3\frac{1}{2}$  in. long.

Connecting rods are heat treated, chrome vanadium steel forgings with phosphor bronze bushings at their upper ends and bronze-backed, babbitt-lined bearings at their lower ends. Connecting rod caps are secured by two alloy steel bolts.

Pistons are of cast iron, well ribbed for cooling and fitted with three concentric rings above the pin and a wiper ring below. The piston pin is locked positively in the piston bosses by a taper set screw registering with a groove machined in the pin, and are retained against endwise motion by snap rings of chrome vanadium steel wire.

#### Accessories Drive

The camshaft and pump are driven by a train of helical gears. The gears on the crank and pump shafts are of steel, and the idler and camshaft gears are of cast iron. The latter shaft is supported in four bearings of the following dimensions:

	Diameter	Length
Front	$2\frac{1}{16}$ in.	$2\frac{1}{4}$ in.
First and Second intermediate	$2\frac{1}{32}$ in.	$1\frac{1}{8}$ in.
Rear	$1\frac{5}{8}$ in.	$1\frac{5}{16}$ in.

Valves are operated by mushroom tappets which are made accessible for adjustment by the removal of three cover plates on the side of the cylinder block. The valve springs are of the barrel type and are secured by a cup and split retainer at their lower ends. The intake and exhaust valves have clear diameters of  $1\frac{1}{8}$  and  $1\frac{3}{4}$  in. respectively. The seat angle is 45 deg.

Crankshaft and flywheel are put in static and dynamic balance and all reciprocating parts have been made as light as is consistent with strength. Connecting rod assemblies are balanced to a given weight and care is taken to maintain the center of gravity alike in all rods.

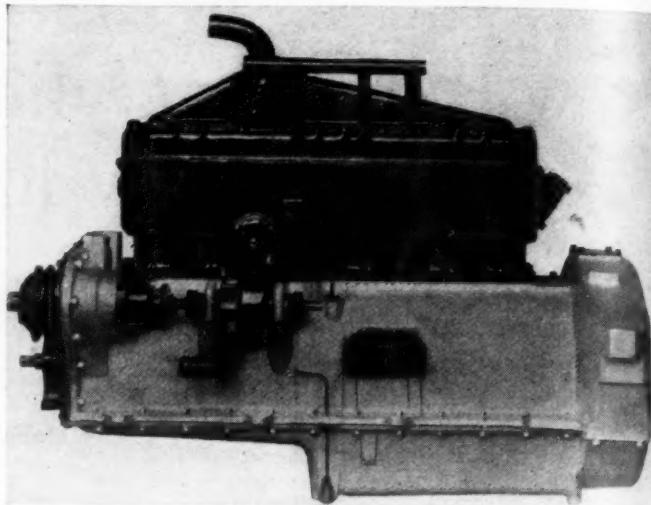
Oil is supplied under pressure by a gear oil pump located in the base of the crankshaft and driven by helical gears from the camshaft. Oil entering the pump is first filtered through a wire mesh screen. It is delivered to a seamless steel distributing pipe cast in the crankcase, from which it passes to the main and camshaft bearings through ducts drilled in the bearing webs. Timing gears are lubricated by the overflow from the pressure relief valve. Oil thrown off by the rings on the rear end of the crankshaft drains back to the reservoir in the oil pan by means of a return tube provided for the purpose.

#### Cooling System

Cooling water is circulated by a centrifugal water pump with bronze runner and bronze sleeve protecting the shaft. The water pump, which is supported by two brackets cast integral with the crankcase, is driven at one and one-half times crankshaft speed. The fan bracket support is cast integral with the crankcase and a fan pulley for a V-belt is fixed to the pump gear shaft where it is readily accessible for belt removal and repair.

Intake and exhaust manifolds are separate gray iron castings. The former is of the rectangular section, high turbulence type. The latter is held against the block by six clamps and is fitted with an expansion joint at its outlet. The carburetor flange is a  $1\frac{1}{2}$ -in. S. A. E.

The engine is built for three-point suspension, the two rear supporting brackets being cast integral with the flywheel housing. The front support is in the form of a trunnion integral with the cast iron timing gear cover. Six alloy steel bolts secure the cast iron flywheel to a



Accessories side of Buda bus engine

flange forged integral with the crankshaft.

Provision has been made for mounting starting and lighting equipment, and for ignition by a magneto driven from the water pump shaft and supported by a bracket on the crankcase. Battery ignition may be employed if desired, as provision has been made for mounting the distributor on the water pump drive shaft housing.

#### Ford's Conservation Principles Applied to Steel Products

FOLLOWING the development by the Ford Motor Co. of new wood-cutting methods whereby 40 per cent of the lumber formerly scrapped is being saved, the company is applying similar principles in conserving metallic materials, and it is estimated that as a result 65,000,000 lb. of sheet steel will be saved yearly. This conservation results from procuring steel from the rolling mills in the form of coils and large pieces, rather than in sheets trimmed to standard lengths, and from extensive improvements in stamping dies and handling methods.

Various parts are cut direct from coils of sheet steel, this eliminating wastage and loose ends. For instance, five crankcases can be produced from the same amount of stock which under the old method yielded four. At the present rate of production the yearly saving on this part alone will total 4,000,000 lb.

One of the most effective changes relates to the windshield bracket blank, which is now also cut from the coil. When stamped from standard stock, a piece  $18 \times 32\frac{1}{2}$  in. yields six brackets. By the new method the blanks are cut on the bias, at an angle of 7 deg., and the same number of brackets can be obtained from a piece of stock of the same length but  $2\frac{1}{2}$  in. narrower. The saving on this item will amount to 1,435,600 lb. yearly.

Differential gear lock rings are formed from steel wire bent and flattened by a special automatic machine. Use of the wire will eliminate waste and produce a stronger part, because the grain of the steel follows the ring.

By flattening the edges of the generator and brush holder support rings where they fit together, and by a slight change in design of the bakelite washers, waste in cutting out of these patterns will be reduced by 31,500 lb. In addition 9,450,000 rivets annually will be saved in assembly with actual improvement in the parts.

According to officials in charge of the work, the conservation program as applied to steel, and development of costly special machinery which is economically justified because of the great production, is only well begun.

# Close Checking of Short-Swing Trends Cuts Selling Costs

*Oldsmobile collects detailed information—then puts it to work.  
Data from field men and distributors used in practical task of setting current rate of production.*

To avoid a recurrence of the situation which developed in the early months of this year, factory executives are studying intensively means of maintaining a proper balance between production and sales. Because of the many variables involved, this problem cannot be solved with 100 per cent accuracy, but there is no doubt that the margin between the factory output and sales can be held within closer limits than in the past. The methods employed by the sales department of the Olds Motor Works in forecasting its requirements are of interest in this connection, because they show how one large producer is meeting this problem.

Sales forecasts made by this company are based on two fundamental factors: the probable trend of the market and the stocks of cars in dealers' and distributors' hands. In determining the market trend, each distributor territory is studied individually, use being made of all available information concerning it. Information about the probable trend of the market comes from five sources:

1. Distributor reports on general outlook and estimates his needs.
2. Factory field men report monthly on general and automotive conditions.
3. Statistical data on car stocks is gathered every ten days.
4. Previous sales records are available for comparisons.

5. Sales executives weigh all other factors in light of their personal knowledge of the situation in various territories.

The reports received monthly from the factory field representatives outline current and probably future conditions. These men are in a good position to get accurate information, since they make contact with all Oldsmobile dealers in their territories, and in the course of their work frequently interview local bankers. The fact that they are constantly traveling over the territory also gives them plenty of opportunity for observation. These field men report on the form shown in Fig. 1, and from these forms a recapitulation showing conditions in each State is made on a chart similar to that shown in Fig. 2.

## Advantage of Field Men's Reports

The advantage of having the field men report on a form is, of course, that the desired points are covered and also that uniformity makes it easier to make comparisons.

Accurate statistical information concerning the stocks of cars on hand in each territory is received from distributors every ten days, and by comparison with previous reports the current sales trend is indicated.

Records of sales for the corresponding months of previous years are available at the factory and are used to determine the effect of season on demand in each territory. All these data are considered by the sales executives and balanced against their own knowledge of individual and sectional economic conditions. Estimates of sales by months for the next three months are then made conservatively.

REPORT OF TRADE AND OTHER CONDITIONS		(1)
Data furnished by _____	State _____	
Salesman _____	Date _____	
Zone Mgr. _____		
Branch Mgr. _____		
Note: Have report cover each state separately. Report must be at Lansing by the last day of the month.		
WEATHER		
CROP AND AGRICULTURAL CONDITIONS		
FINANCIAL CONDITIONS		
INDUSTRIAL CONDITIONS		
EMPLOYMENT		
GENERAL CONDITIONS		
AUTOMOBILE SALES		
FUTURE PROSPECTS		
OLDSMOBILE STANDING		
OLDSMOBILE DEALERS STANDING		
Present Number of Dealers _____		
% good _____ % fair _____ % poor _____		
Remarks (See reverse side)		

REPORT OF TRADE AND OTHER CONDITIONS. (Date)											
STATE	Principle Industries	Weather	Crop & Agricultural Conditions	Financial	Industrial	Employment	General Conditions	Automobile Sales	Puture Prospects	Retail Sales Olds vs. competitors	Oldsmobile Standing
Alabama											
Arkansas											
Colorado											
Connecticut											
Delaware											
Florida											
Georgia											
Illinois											
Indiana											
Iowa											
Kansas											
Kentucky											
Louisiana											
Maine											
Massachusetts											
Michigan											
Rhode Island											
So. Carolina											
W. Dakota											
Tennessee											
Texas											
Vermont											
Virginia											
N. Virginia											
S. Virginia											
Wyoming											

Fig. 1—Form provided Oldsmobile factory field men for monthly reports on business conditions. Fig. 2—Shows the form used in factory summary of field men's reports

CITY	MODEL 30 - 6 CYLINDER						TOTAL	REPORT OF CARS IN STOCK AND UNFILLED ORDERS ON FILE FOR PERIOD ENDING									
	CHASSIS	ROADSTER	SPECIAL ROADSTER	TOURING	SPORT TOURING	CAB		COUPE	SEDAN	DELUXE SEDAN	30	43A	47	Truck	Used Car Stock	No. Issued	
<b>Factory</b>									St.	Or.	St.	Or.	St.	Or.	Oldsm. O Mk.	Comb. Values	
Albuquerque																	
Atlanta																	
Billing																	
Boston																	
Buffalo																	
Chicago																	
Cincinnati																	
Cleveland																	
Columbus																	
Dallas																	
Dayton	1																
Denver	2																
Dixie Motor	3																
Spokane	4																
Toledo	5																
Washington	16																
Winston-Salem	17																
Oshawa	18																
Export R. H. D.	19																
Export L. H. D.	20																
<b>TOTAL</b>																	

(3) DISTRIBUTOR  
REPORT FOR PERIOD ENDING  
SEE INSTRUCTIONS FOR FILLING OUT THIS REPORT ON REVERSE SIDE.

(5) DATE ISSUED

(4)

Fig. 3—Oldsmobile distributors report car stocks every ten days. Fig. 4—Shows how these reports are summarized at factory. Fig. 5—Complete recapitulation of distributor's reports is made by the factory every month on this special form

Obviously, common sense is an important factor in making these estimates, and pending the development of some empirical method of predicting future events, it is a most necessary ingredient. However, an estimate of the probable trend of sales, which is made after careful consideration of the factors affecting the buying power of the public in each distributor territory, is likely to be more nearly accurate than a guess based on unsupported optimism and a superficial knowledge of the general economic situation.

#### How Sales Forecasts Are Used

The sales forecasts are then considered in conjunction with the stocks of cars in each distributor territory. An expectation of a large increase in retail sales would not in itself justify stepping up factory production in proportion if dealer stocks were at a high level. For this reason the factory receives reports from its distributors every ten days, showing the stocks of cars on hand in their territories.

The factory cooperates with its distributors in securing this information by sending out return post cards at proper intervals to the entire dealer organization. The return portion is addressed to the distributor and has the dealer's name addressographed on it, so that it is unnecessary for him to sign it. This precaution is taken to avoid the possibility of a dealer filling out the report and mailing it without signing his name, in which case the distributor would be unable to identify it. This report shows the cars the dealer has on hand and his unfilled retail orders by body models; also his used car stock divided between Oldsmobile and other makes, and its combined value.

The postcard reports received by the distributor from his dealers are used in making a territorial report, Fig. 3, which shows how many cars of each model each dealer has on hand. This report is made on a special form provided by the factory. It also shows the number of cars delivered to dealers by body models during the period,

the number returned to distributor's stock, the number of unfilled retail orders, and the total number of used Oldsmobiles and of other makes in the territory and their combined value. The distributor also supplies similar information regarding his own stocks of new and used cars, and the total of his figures and those of his dealers gives the stocks on hand for the entire territory.

When these reports are received at the factory, a recapitulation is made, Fig. 4, which shows the number of Oldsmobiles in stock in each territory, the number of unfilled orders, the number of used Oldsmobiles in stock, the number of used cars of other makes, and the total value of the used car inventory. In addition, each month a report is made up showing the number of cars of each model in stock in each distributor territory (see Fig. 5).

These ten-day reports of car inventory keep the factory informed as to current conditions in all territories and permits prompt revision of estimates when events prove them inaccurate.

The next step is to establish the production schedules. This is done on the 25th of each month for the three succeeding months. Previous estimates for the first two months of this period are revised at this time, if necessary, to bring them in line with the current outlook.

In working out production schedules the aim is to provide each territory with sufficient cars to enable it to meet all demands promptly. The stock to be carried varies with the location of the territory. For example, in the Pacific Coast States a four weeks' supply is the basis; in the Central West, three weeks, and in territories nearer to the factory, a two weeks' supply is considered sufficient.

An effort is made to keep the production of each type model in line with the demand for it. On Thursday of each week the sales department furnishes the production division with an estimate of its needs during the coming week. This estimate is worked out on a 100-car base line

basis and the proportions established applied to the week's production. Of course, the output cannot be curtailed instantly to conform to the new proportions, but changes may be made with sufficient rapidity to avoid the possibility of heavy over or large under stocks of a particular model. The use of pyroxylin finish on all models is a factor in making the output elastic in this respect.

Having determined the month's production, the next step is to divide it between the different territories. This is done by proportion. For example, assume that the total of the annual allotments called for on distributors' contracts is 100,000. Assume, further, that the annual allotment for a particular distributor is 1000 cars, or 1 per cent of the total. His quota of the month's production would, therefore, be 1 per cent. The annual allotment for each territory is fixed in a conference between

the factory sales department and the distributor responsible for the area under consideration.

These monthly quotas are established for each distributor and are useful in giving priority to orders when production falls short of demand, or, in other words, when production estimates are in error. If, on the 15th of the month, distributor A has received 50 per cent of his quota, while distributor B has received only 25 per cent of his monthly quota, B's orders are given priority over A's if current demand is in excess of production. Of course, if current demand should by any chance be short of production, there is no necessity of assigning priority to orders.

In this connection it should be understood that cars are shipped only on order and that distributors are under no compulsion to take the number of cars indicated by their monthly quotas.

## New Warner & Swasey Turret Lathe Gives Wide Range of Speeds

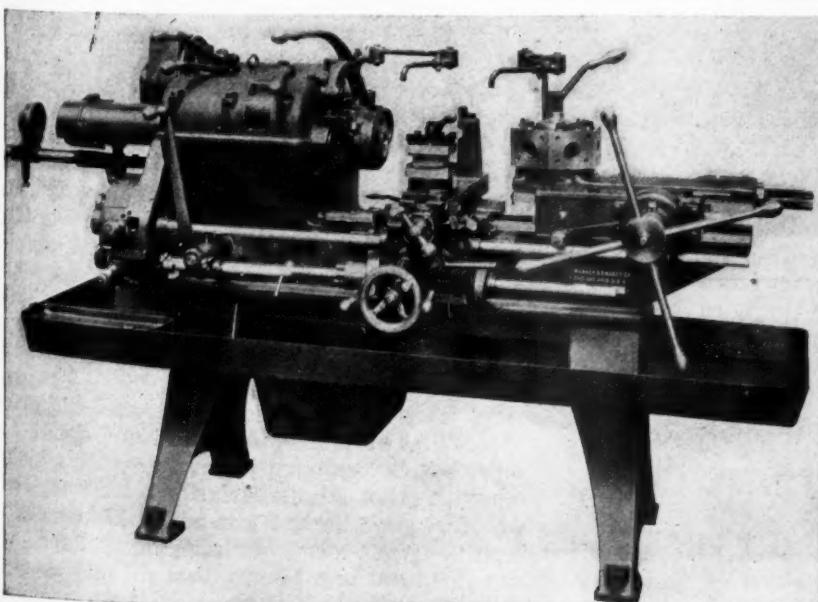
**A**N "all geared head" model of its No. 4 Universal turret lathe has been brought out by the Warner & Swasey Co., Cleveland, Ohio. The No. 4 is designed for smaller work than the A type of Universal Hollow Hexagon turret lathes of the company, but it has two tool carrying units with independent power feeds, the same as the larger machines. The standard cross slide has five cutter positions, four on the square turret and one on the rear tool post. Cutters in these positions often operate simultaneously with the tools on the hexagon turret, which has six tool positions.

The new all-gear head was designed to meet the need for greater power and a wider range of speeds. Twice as much power can be delivered at the spindle as through the cone-type back-gear drive, and twelve spindle speeds in both directions, ranging from 30 to 760 r.p.m., are provided. The increase in speeds and power from the all-gear head is claimed to enable the machine to pull steelite cutters to their capacity and to make it possible to operate with a greater number of cutters at the same time.

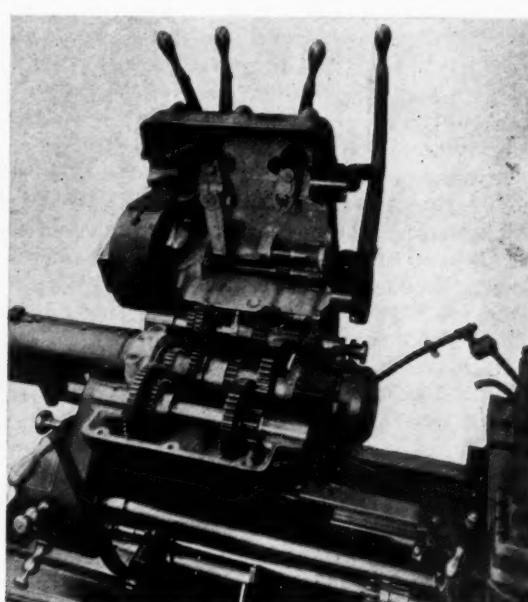
Motor drive may be used, and the motor may be mounted either at the rear of the machine on the head-

end leg, driving the pulley by means of a belt, or on the head, where it is desirable to conserve floor space. With either type of mounting the machine is a complete unit in itself and can be installed in any convenient location.

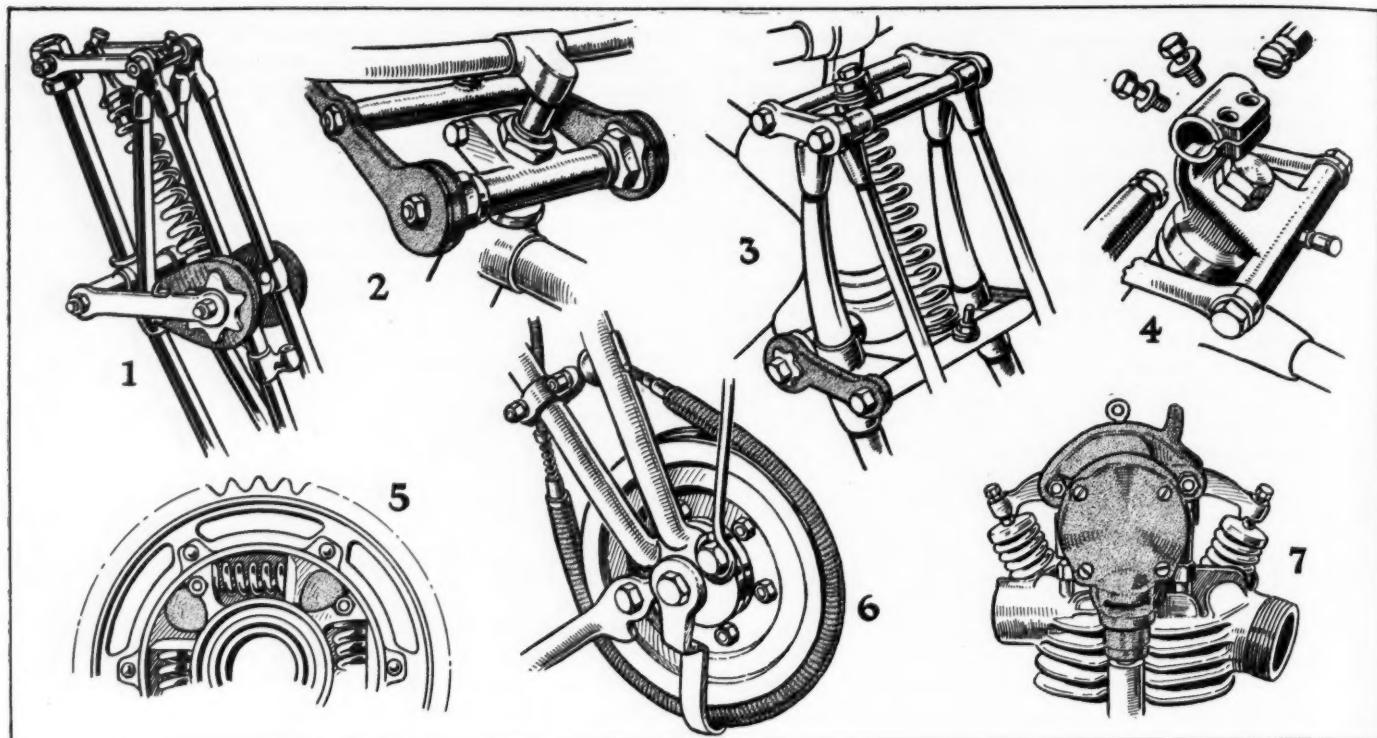
**A**N improvement has been made in the Rotostat, a stroboscopic instrument permitting of making high speed mechanisms appear to be slowly moving and of thus studying the exact motion of their elements, whereby a tachometer may be attached to the instrument and driven from it directly. Upon synchronizing the Rotostat with the observed machine and getting the mechanism or the particular machine part being studied into an apparently stationary position, its speed may be directly read from the tachometer on the Rotostat. The improvement appears to be of particular advantage in cases where the parts whose motion is to be studied are somewhat inaccessible or else are so delicate that the direct application of a tachometer would affect their speeds. The Rotostat is made by the Rotostat Instrument Co., Philadelphia.



Warner & Swasey "all-gear" head No. 4 Universal turret lathe



The "all-gear" head with top half of case raised



Some constructions seen at British motorcycle show: 1, 2 and 3—Three applications of front spring dampers on Webb, Enfield and B. S. A. 4—Adjustable handle bars on Ariel. 5—Humber cushion chain sprocket. 6—Front brake on new Triumph. 7—Overhead camshaft on 2½-hp. Velocette

## Lightweight Machines Prove Their Popularity at British Motorcycle Show

*More effective brakes, stronger frames and dampers on front springs are among recent developments. New Triumph model is chief feature. Balloon tires introduced. Prices are 10% lower.*

By M. W. Bourdon

INTRODUCTION of a new and smaller model by the Triumph Co., the largest maker of motorcycles in England, was the chief feature of the Motor Cycle Show which was held recently at Olympia.

Triumph machines hitherto have been relatively high priced, the four-cycle models ranging from approximately £65 upward. The new machine, which has a single-cylinder L-head engine of 30 cu. in. displacement, all-chain drive, three-speed gearset and 26 x 2½-in. Dunlop cord tires, is offered at £43, or with electric lighting and horn £50. The nearest approach to this among prominent British makes is the B. S. A. at £52. Outwardly the new Triumph resembles other machines of the same make, except the four overhead valve Ricardo engined model introduced two years ago, but it has been designed throughout with a view to cheapening production costs without detracting from efficiency or departing from the previous high standard of finish.

An increase in the number of overhead valve engines is a feature of British machines; with two or three exceptions pushrod operation is used. The exceptions have overhead camshafts for two valves in single-cylinder engines. Hitherto the majority of overhead valve motor-

cycle engines have had the rocker brackets as separate units from the head, bolted on, but at the present show integral brackets are much in evidence.

More careful thought is apparent in the design of two-cycle engine cylinders, pistons and induction and exhaust passages. These engines, with one exception, are of the crankcase compression type and are well exemplified by the range of Villiers engines, a make to be found on a large proportion of two-cycle light weight types.

### Changes in Two and Four-Stroke Engines

These engines have a flywheel magneto and hitherto have been made with two ports only—inlet and exhaust; but a new model has two exhaust ports, a feature which, in conjunction with other minor variations, has resulted in an increase of power amounting to about 15 per cent.

In four-cycle engines semi-mechanical systems of lubrication are far more in evidence, though only a very few makers have adopted full mechanical systems, circulating the whole oil supply. The favored arrangement is a pump driven from the timing gear, drawing

oil from a frame tank and delivering it to a sight feed with screw adjustment, whence it is fed by gravity.

Full pressure lubrication is found for the first time, but only on one make, in which the oil is taken under pressure to the small end of the connecting rod, as well as to other bearings. The Rover, produced by a subsidiary company of the car manufacturing firm of that name, is one of the few examples with a circulating splash system of engine lubrication.

There is a marked increase in the number of machines exhibited with the Bradshaw oil-cooled engine (so-called despite its cylinder head being air-cooled as usual). In this engine an oscillating and rotating plunger pump maintains the whole of the oil supply in constant circulation, delivering it to an annular oil duct around the upper end of the cylinder. Thence the lubricant falls down the outside of the cylinder wall (within a jacket) and back into the crankcase. The counterweights of the crankshaft and the big end splash the oil that falls into a deep trough, the remainder returning to the sump. Overhead valves are fitted, the rocker bearings being lubricated by wick feed from a two-part chamber overhead which also serves as the rocker bearing bracket.

#### Pushrods Enclosed on Some Engines

Some makers of overhead valve engines now carry the pushrods up through a single tube of large diameter, using this tube as a means of conveying oil mist to the rocker chamber above. The majority, however, depend upon the rider replenishing oil cups or the chamber to lubricate the rocker bearings. In two or three cases screw-down grease cups are relied upon. Where the pushrods are exposed no special provision is made for lubricating their joints.

There are several new unit powerplants, but the majority of machines still have separate gearsets; even the new Triumph has this latter feature. Working in conjunction, however, the makers of Villiers engines and Jardine gearsets have produced a unit powerplant for light weight machines with a primary drive through spur pinions.

No increase in the tendency, first noted last year, to provide four speeds is to be recorded. Rudge Whitworth (of wire wheel fame and one of the most prominent of British motorcycle makers) continues the four-speed set with opposed skew-cut pinions for each indirect ratio.

All-chain drive is gradually becoming standard on machines exceeding 3 hp., but still merely is optional at a higher price than the chain-and-belt system in quite a number of 3½-hp. machines. With chain transmission a shock absorber or "cush" is by no means universal, irrespective of engine size or type, while for light weights it rarely is provided. Chain guards, as distinct from complete chaincases, are the rule for secondary chains and are sometimes used for the primary chain as well. For the lubrication of the latter a pipe occasionally is carried from the air-release valve of the crankcase.

Brakes have improved greatly of late, taking British machines as a whole. The expanding type in both rear and front hub drums is on the way to becoming universal, though there are still many makers—and experienced riders, as well—who

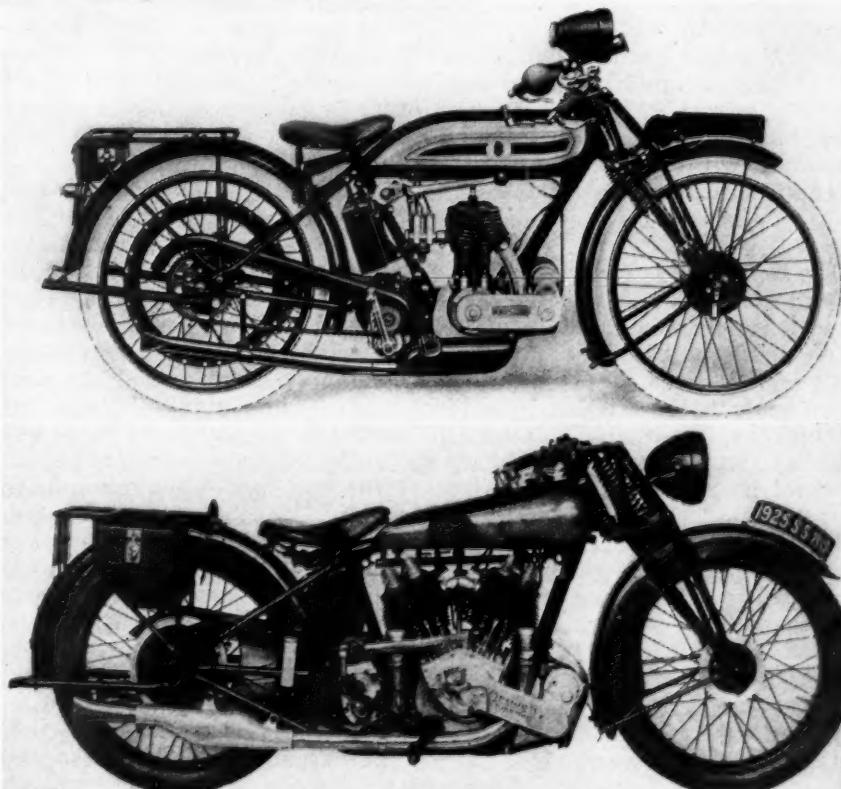
assert preference for a block and V-rim brake for one wheel, either back or front. Expanding brakes have increased appreciably in dimensions and examples of 8-in. diameter are to be noted. Six-inch diameter is quite usual, whereas twelve months ago anything bigger than 4 or 5 in. was exceptional. Practically all expanding brakes are stock components, the Webb being found on 80 per cent of machines thus equipped.

Balloon tires have appeared for the first time at a British motorcycle show, though only on three or four makes. Among these is the Indian exhibit, where 27 x 3.85 in. Goodyear balloons are shown on two models. Only one maker shows balloons on a small machine, the latter a 1½-hp. two-cycle light weight with 25 x 3-in. Dunlops.

Last year, two, or at most three, makers were providing frictional checks (Hartford pattern) for the front fork springs, but at the present show between 20 and 30 firms are using them. They are integral, as a rule, with one of the pairs of fork links, and vary in the diameter of the disks from 2 in. to 4 in., the smaller being the most usual. This feature is found also on one machine with a laminated spring instead of the usual helical coil or coils. On two or three exhibits, sport models are seen with steering dampers of the same type, the thick end of a lever being attached to the center of the handlebars, the other end located by a clip on the top tube or tank. An accessible means of adjustment of the frictional effect is provided for use while the machine is running.

Sport models are numerous, solo machines of this type ranging from 2¾-hp. at £50 or so to 8-hp. (approximately 60 cu. in. twins) at £150. The latter price applies only to the Brough Superior, an exceedingly high-grade mount to which a guaranteed speed of 100 m.p.h. is attached, or 80 m.p.h. with a sidecar.

There are no additions to rear spring frames to be noted, makers in general appear to be leaving this fea-



Above—New Triumph 5-hp. machine. Below—8-hp. Brough with guaranteed speed of 100 m.p.h.

ture severely alone for the present. There are, of course, a few continued examples, but they are very much in the minority.

Electric or other lighting equipment still is an extra on 90 per cent of British motorcycles, but with the proved efficiency and reliability of combined magnetos and generators, makers are able to offer with confidence electric lighting at a much smaller additional figure than hitherto. When a magneto-generator with continuous current and a battery is concerned, the extra amount ranges from £5 to £8, including lamps; there are two sets of this kind widely favored, namely the



Crankshaft assembly of overhead valve Douglas twin. Note use of forged rods

M-L Maglita, which has a single rotating armature, and the Lucas Magdyno, with two intergeared armatures. Villiers-engined machines (with flywheel magnetos) are offered with alternating current lighting for £2 extra with head and rear lights.

One prominent maker (Matchless) is offering what is termed an all-weather model. On this there are metal panels at each side, forming air scoops in front and serving to inclose the engine, gearset, etc.; the panels are formed as a unit with leg-guards and are easily detachable. In addition a front screen is provided. This consists of a celluloid panel in a metal frame, stayed to the handlebars and having a leather apron depending from it, secured at the bottom to prevent it from blowing back. A half-dozen other makers show machines with similar front screens and one small maker has side guards for the engine, etc.

#### Ner-a-Car Drops Friction Drive

The Ner-a-Car is shown for the first time in two sizes, a four-cycle L-head engine of 3½ hp. (21 cu. in.) being fitted to a new model that supplements the original type as offered in U. S. A. with 13.5 cu. in. two-cycle engine. Both models have all-chain transmission and a three-speed gearset, the friction transmission of the original machine having been displaced; the flywheel magneto also has given place to an ordinary magneto and a steel flywheel now is fitted. The prices of the two models are: 3½-hp., £60; 2½-hp., £50.

Resembling the Ner-a-Car in having a pressed steel frame, but differing widely in the manner of applying that feature, a new rendering of the Pullin motorcycle (originally introduced in 1920 and described in AUTOMOTIVE INDUSTRIES at the time) has appeared. In this the frame consists of two pressed steel units, welded together at the longitudinal center line and forming—with welded units—the fuel and oil tanks. The main units or side-plates extend below the engine and gearset.

Detachable panels afford access to engine and gearset. A girder form of pressed steel front fork is pivoted to the steering pillar and has an inclosed spring abutment.

The engine is of the two-cycle type, with piston displacement of 21 cu. in., flywheel magneto, single (Hyatt) bearing crankshaft and a lubrication system in which oil is fed by suction into the induction pipe, without direct feed to the crankcase. The price of the machine is £48.

Among other general design tendencies, the widespread provision of handlebars adjustable as to angle is to be noted.

As regards sidecars, the only new points of design relate to all-weather tops and improved front screens. In both of these items the better class of sidecar is now approximately equal to the average British car in affording full protection to the occupant.

Sedan sidecars are shown by a few makers, but they still are viewed as somewhat freakish. Perhaps the most notable development in sidecars is the large number of tandem bodies. Some include two seats always in readiness, but the majority have a hinged back which when opened discloses the second seat.

Motorcycle makers are showing examples of this kind, most of them for the first time; hitherto most of them have been strongly averse from tandem sidecars on account of the heavy stresses applied to the motorcycle frames; but seemingly their hands have been forced by buyers, who have had their requirements met hitherto by sidecar specialists. For that reason and also because owners have persisted in fitting light attachments even to 2½-hp. machines, a great many motorcycle frames have been stiffened materially.

Prices show an average reduction of 10 per cent and are now at or below the pre-war standard in value.

Apart from cycle attachments, which are few in number, as are also motor scooters, the smallest models are the ultra-lightweights with single-cylinder two-cycle engines of 150 c.c. (9 cu. in.) and 175 c.c. displacement. They are priced at from £27 to £38, and despite their microscopic engines have proved to be a thoroughly practical class of machine when fitted with a three-speed gearset; in weight they range from 100 to 150 lb. One make in particular (the Francis-Barnett (some details of which were given in AUTOMOTIVE INDUSTRIES of Nov. 8, 1923), has had a large sale.

#### Light Weight the Biggest Class

The biggest class among the exhibits at Olympia is the light weight, with an engine of just under 250 c.c. (15 cu. in.); in this class the two-cycle and four-cycle engine is about equally favored, prices ranging from £35 to £45, according to the number of gears, type of drive, equipment, etc. B. S. A. has a model which is an excellent example. It sells at £37 (£40 last year) and has a four-cycle engine with an L-head, two-speeds, all-chain drive and 24 x 2¼-in. tires.

The most popular types of machine among British motorcyclists are the 3½-hp. single-cylinder for solo work and the 4-4½-hp. for sidecar use. Single-cylinder engines predominate, though among the first three makers in output Douglas continues to specialize upon horizontal twins. It is to be noted, however, that some of the largest singles are among the new models, the J. A. P. stock engine line now including a single of nearly 42 cu. in. capacity, one of the biggest engines with less than two cylinders hitherto fitted to British motorcycles. The same line, too, has for the first time been supplemented by an overhead valve model.

Stock engines and gearsets continue to prevail on the great majority of British machines. Stock front forks are also prevalent, but frames, wheels and all other components are almost invariably of special designs.

# Just Among Ourselves

## What Can a Merger Be Expected to Do?

SOMETIMES the trouble has been to get the dealers enthusiastic about handling the whole line and sometimes it has been because the units building the individual cars have objected to such combination on the score that the dealer cannot properly handle any one car if he is trying to sell a whole line. The fact that such an idea has never yet worked out 100 per cent in practice doesn't mean necessarily that it cannot be carried out, but it does indicate that too much stress should not be laid on its advantages until its worth has been proved definitely. One shrewd observer opined the other day that the one important advantage to be derived from mergers is increased buying economies.

## Charter Member Elected to New Society—Want to Join?

"JUST among ourselves, I'm willing to check up as you suggested a few weeks ago," writes B. J. "I'm attaching a letter written Dec. 8, 1923, which contains some predictions for 1924." B. J. sends along photostat of the carbon copy of his letter as proof of its authenticity and we take pleasure in welcoming him as a charter member of the Society for the Promotion of Checking up Predictions to See If They Come True. B. J. is a darned good guesser, too, for if our slide rule didn't slip a cog his prophecy on 1924 car production is going to miss fire by less than 10 per cent. B. J. is connected with a big parts company and seems to follow the ball very closely. He predicted high production for six months of 1924 and a drop after July 1, and also foresaw the increase in mergers and rumors of mergers which have come about—not to mention his prophecy that the credit men would be more important in 1924 than ever before. But he did slip a cog for fair when he pre-

dicted a bad year in foreign trade. 1924 has been very good from an automotive export standpoint. Wish everybody would be as frank with themselves as B. J. Or if they can't remember past guesses, we wish they'd give us a few confidential guesses about 1925—then we'll be glad to call on the S. P. C. U. P. S. I. T. C. T. to check back on them a year hence.

## Leaping Lightly from Conference to Conference

TRAFFIC safety, highways, motor transport—motor transport, highways, traffic safety! For three weeks, beginning with this one, there is to be a veritable rain of meetings to discuss these topics. It isn't so many years ago that some people were despairing of ever being able to get folks interested in highways and the various problems connected with them. Today interest is so great as to generate five conferences in three weeks. Only graduates of a school of memory could be expected to remember offhand the names of all of the organizations gathering to talk about highways and related subjects. Sessions are being held by the National Highway Traffic Association, the Highway Research Board, the New England Motor Transport Conference, the National Conference on Street and Highway Safety, and finally a Motor Rodeo dinner. There isn't as much overlapping in these various meetings as one might think at first glance, but it will be well for the industry when it is all over to sit back and determine definitely just what has been gained by the sessions. That valuable results will be achieved seems a foregone conclusion, but to make certain, it is desirable that the meetings be evaluated coldly and analytically after they are all over. If highway problems aren't solved soon it won't be for lack of trying.

## King Football Rides to Glory in a Motor Car

THE football season just passed hung up new attendance records for the gridiron sport. Over 100,000 witnessed a game in California a few weeks ago, and more people went to football games during the last three months than in any previous season. King Football's popularity undoubtedly is growing. And the automobile can be credited with an important part in promoting this virile American sport. Particularly in the middle and far West has the motor car made it possible and pleasant for many thousands of people to travel in comfort over long distances to witness gridiron contests—people living in small towns as well as large ones, who never would take the trouble necessary to make a train journey for the same purpose. King Football undoubtedly has ridden at least a good share of the way to popularity in an automobile.

## Making Emergency Brakes Emerge

"THE automobile maker owes it to himself, as well as to the public, to make his car safe to drive. This means that it must be strong, that it can be stopped promptly in an emergency, and that due notice of its approach is given day and night." This advice is not given by an outside critic unfamiliar with the difficulties of automobile manufacture and sale, but by the president of an important automobile manufacturing company. Almost every car built already meets the first requirement laid down by this executive, but there still is considerable room for improvement as regards the second item, particularly in connection with so-called emergency brakes, some of which were characterized the other day by an irate owner as being "unable to arrest a sigh." Too harsh a criticism, no doubt, but showing how some owners feel.

N. G. S.

# Designs Used and Proposed for Mounting Connecting Rod Head Roller Bearings

*Motorcycle, racing and dirigible engines have been successfully fitted with anti-friction bearings at the crankpin. Problem not solved for automobile engines.*

**R**OLLER bearings have long been used to a limited extent in connecting rod heads—in recent years particularly in engines of racing cars. The majority of motorcycle engines built in this country have such bearings, and a touch of timeliness is lent the subject by the announcement that the Maybach engines of the ZR-3 have only roller bearings on the crankshaft.

An article embodying an analysis of the problem referred to and a review of the proposed and applied solutions was recently published by J. Dauben in *Der Motorwagen*, and the following information on the subject is abstracted from that article.

Mr. Daugen first refers to the rather unfavorable conditions under which the roller bearing has to work in the connecting rod head. The rollers in such a bearing have a dual motion, including a rotary motion around the axis of the crankpin and a planetary motion around the axis of the crankshaft. They are subjected to centrifugal forces due to both of these motions, and the resultants of these centrifugal forces on the rollers in the different positions are indicated in Fig. 1. These forces are of a magnitude which is far from being negligible, and in this connection it may be mentioned that at 3000 r.p.m. and a stroke of 4 in. each roller is subjected to a force practically 500 times its own weight, pressing it outward. In addition, the cage is subjected to a similar

why ball bearings are out of the question for this purpose, as for equal carrying capacity balls are materially heavier than rollers. It is advisable to keep the rollers down in diameter ( $\frac{1}{4}$  to  $\frac{5}{16}$  in.), without, however, overtaxing their carrying capacity. It is also a good plan, especially in view of the non-uniform motion of the connecting rod head bearing, to keep the diameters of the races as small as possible and for this reason it is usually best to do without special inner races and let the rollers run directly on the hardened crankpin. Ball bearing manufacturers usually advise against this practice, because they prefer to see standard bearings used, but experience has shown that where the proper grades of steel are selected and it is suitably hardened the crankpin can be used for a roller race without hesitation.

## Design of Cages

Great importance attaches to the use of rigid and accurate cages. So far massive cages of a tough bronze have given the best service. However, since reduction of weight is essential, for the reasons enlarged upon in the foregoing, the use of light metal, and especially of magnesium alloy, is promising, even though the results obtained with it have not always been satisfactory.

With one-piece crankshafts it is necessary to make the cage in four parts, which must be so designed as to overlap one another and must be bolted or riveted together. The cage must be assembled directly on the crankshaft, which is a great hindrance in quantity production. An all around satisfactory design for a roller bearing connecting rod head for automobile engines has not been developed as yet, but some progress in this direction is noticeable.

In order that roller bearing connecting rod heads may give satisfactory service it is essential that a reliable oil feed be provided for them. In so-called moderate duty engines, such as those of stock cars, splash lubrication may suffice, but it certainly does not in racing engines, which often must run at high speed under full throttle for hours at a time. The only reliable method of feeding oil to the connecting rod bearing is by pressure through a drilled crankshaft. This system has proved the most dependable in connection with smooth bearings, and as there is considerable sliding friction also in connecting rod roller bearings these bearings should be as thoroughly lubricated as smooth bearings.

The simplest form of connecting rod head roller bearing is that without cage, as represented in Fig. 2. The rollers are of small diameter and comparatively long, and they run directly on the hardened crankpin and in the connecting rod head. It is important that they fill up the space with only very little clearance so that they will not hammer against each other with great force and cannot "cock." The only disadvantage of this type of bearing is that the rollers have a tendency to "cock" and break and then generally destroy the entire bearing.

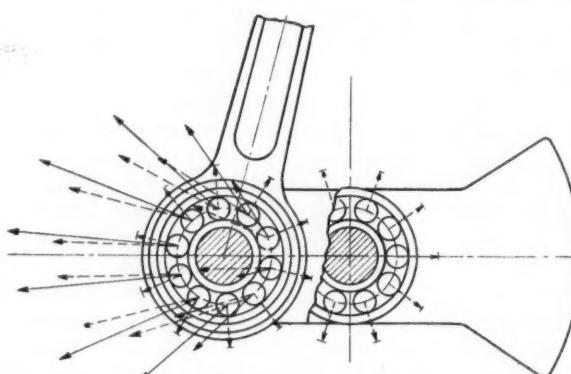


Fig. 1—Centrifugal forces on the rollers of a roller bearing on the connecting rod head

force which is transmitted to the rollers and must add materially to the friction.

Another factor which has an unfavorable influence on the operation of a roller bearing in the connecting rod head is that the rolling motion of the roller is non-uniform, due to the oscillating motion of the rod itself. This involves accelerations and decelerations of both the rollers and the cage, and causes considerable friction between roller and cage.

Owing to the fact that the forces which have such an unfavorable influence on the rollers and cages are directly proportional to the weights of the parts, these parts must be held as small as possible. This also is the reason

This cageless connecting rod bearing has given excellent service in a number of British and American cycle engines.

An improvement upon the bearing just described is represented by that shown in Fig. 3, which also is used in cycle engines (of the V type). Here also the rollers run directly on the hardened crankpin, while the outer races are pressed into the connecting rod head. The rollers, which are  $\frac{1}{4}$  in. in diameter and  $\frac{5}{16}$  in. long, are inserted into solid bronze cages, of which there are two for each rod. One side of the cage is open and the different cages are so arranged that an open and a closed side are always together. At the ends there are hardened steel disks, the same as in the design of Fig. 2. Lubrication through the pin is provided for, but the radial holes are not located in the path of the rollers, as that would result in the rollers wearing depressions in the bearing surface owing to the reduced bearing surface.

Another example from motorcycle practice is shown in Fig. 4. Standard roller bearings are used, the outer races being a free fit in the unhardened rod, so they will slowly travel around and distribute any wear over the whole surface. In order to hold the connecting rod against lateral forces, a wire ring is let into a groove turned into the two outer races. An interesting feature consists of the spring steel conical washers which hold the inner races in an axial direction without hindering the tightening up of the flywheels on the crankpin. In this design, in which the inner races are mounted on extensions of the flywheel hubs, they must be made a loose fit in the first place, because drawing up of the nuts on the crankpin expands the hubs and thus results in a tight fit.

#### Mounting in Automobile Engines

A method of construction used in automobile practice is shown in Fig. 5. The particular feature of this design is the method of fastening the crankpin into the crank arms. The hollow crankpin has a cylindrical fit in the arms, and its ends are cut with four saw slots and are expanded into the arms by means of tapered plugs and nuts. Keying of the joint between the arms and the pin was found unnecessary. A similar joint is used between the arms and the main journals, but in this case keys are used. An advantage of this construction is that it is possible to keep the longitudinal dimensions of the crankshaft accurate, which is not possible if the ordinary tapered joints are used.

In the case of multi-cylinder automobile engines there is naturally a great advantage in being able to make the

whole crankshaft in a single forging, and attempts to make possible the use of roller bearings in the connecting rod heads of such cranks have not been wanting. Thus Robert Conrad, in 1903, developed a design of crankshaft in which the crank arms were of round section and substantially the same diameter as the crankpins, so that the unsplit connecting rod head and the cage could be stripped over the crank from one end, the rollers evi-

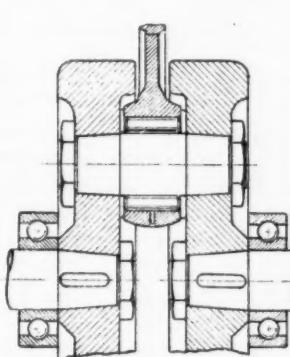


Fig. 2—Cageless roller bearing (British Triumph, Garelli)

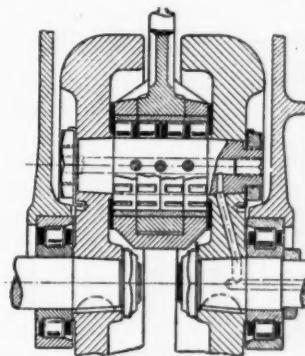


Fig. 3—Roller bearing of a V-type motorcycle engine (Indian, Harley-Davidson, Mabeco)

dently being filled in by the eccentric method. Difficulties arose in connection with the case-hardening of the bearing surfaces and the assembling of the connecting rods with the crankshaft.

To facilitate assembly it is necessary to split the connecting rod head, and in order to obviate difficulties due to discontinuity of the bearing surface for the rollers, in the design shown in Fig. 6 the head is split at an angle. One objection to this construction is that the connecting rod bolts are working under rather unfavorable conditions; another, that the slightest axial movement between rod and cap throws the bearing surface out of round.

An improvement on this design is shown in Fig. 7, where the joint between the rod and the cap is V-shaped. Here the cap is held rigidly in position against endwise movement. Of course, in all of these constructions the rod and cap must be ground out together, and it is probably also the best plan to harden both parts while bolted together. In spite of these various precautions it is still very difficult to secure an accurate round bore in a two-part connecting rod head. The joint, moreover, still presents an unsolved problem.

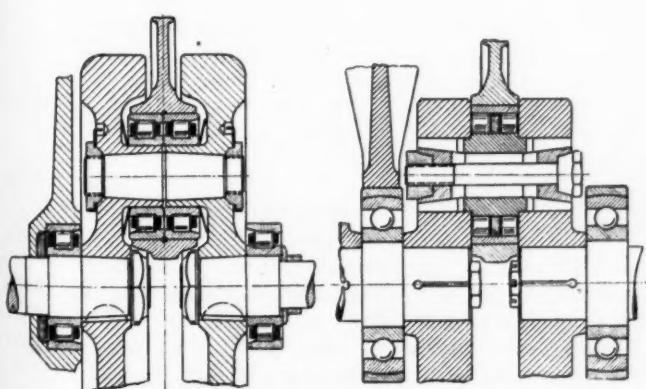


Fig. 4—Roller bearing with tapered crankpin and flexible washers (Cologne Motorcycle Works Franz Becker)

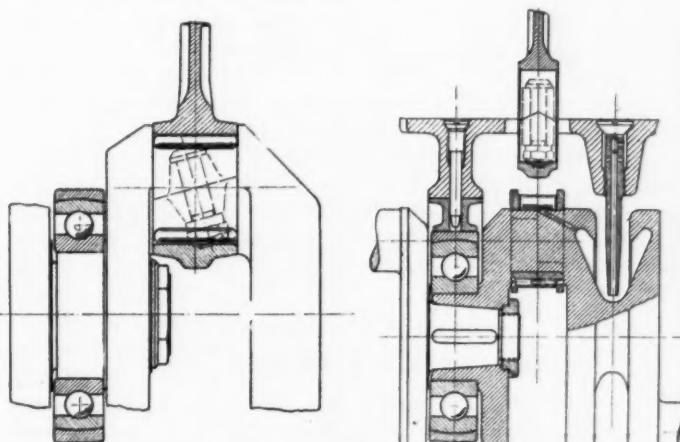


Fig. 5—Roller bearing with cylindrical crankpin (Bolle-Fiedler)

Fig. 6—Connecting rod head split at an angle (Proposal by Fichtel & Sachs)

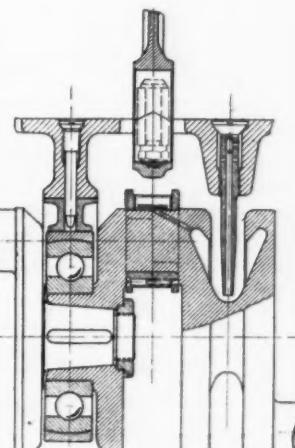


Fig. 7—Connecting rod head with V-type joint (Bugatti racing engine)

# Here and There in Foreign Markets

*By special arrangement with the Automotive Division, Bureau of Foreign and Domestic Commerce*

## Italy Imports Few Tires

**N**O foreign tire has yet reached a position where it can be offered on its merits in Italy with price left as a minor consideration. The Michelin and Pirelli managements dictate price schedules for the whole range of standard sizes and varieties, with Michelin perhaps having more influence than Pirelli. The necessity of conforming to the Michelin-Pirelli price schedules will probably act for an indefinite period to restrict the sales of American and British tires in Italy.

During the first half of 1924, Italy imported 4935.3 metric tons of crude rubber as compared with 3955 metric tons during the first half of last year. Re-exports this year amounted to only 26.1 metric tons; last year 87.8 metric tons were reexported.

At this rate, Italy will require nearly 10,000 tons of rubber this year as compared with 8000 tons for 1923. Imports of reclaimed rubber dropped from 26.2 metric tons in the first half of 1923 to 15.6 this year; and scrap rubber from 300.5 to 181.8 metric tons; while gutta percha imports increased from 41.1 to 164.2 metric tons.

The value of imported crude rubber in the first half of the year came to Lire 53,927,441 and of crude gutta percha to Lire 6,112,684.

## Russian Import Limitations

**T**HE plan worked out by the Central Administration of Local Transport for the importation of automobiles provides for the importation of 1,318 automobiles during the coming year. The Central Administration of State Automobile Factories (TSUGAZ) has proposed that this figure be reduced to 250, in the belief that the remaining light cars and trucks can be fully supplied by the Central Administration of State Automobile Factories.

The president of the board of directors of the Central Administration of Automobile Factories, K. N. Orlov, pointed out that the importation of automobiles would have a bad effect upon automobile building which has been started. The Executive Bureau of the Supreme State Commission of Metal Industries, by which this question was examined, has resolved to permit the importation of automobiles only in case the buyer places an order with Russian factories twice as large as the proposed import.

## Austrian Factory Conditions

**A**USTRIAN automobile factories engaged in the production of larger cars, such as Daimler and Steyr, have reduced time to a minimum. High

production costs and the reduction in domestic buying power together with increased foreign competition in the export market, may result in the shutting down of automobile plants. On the other hand, the Perl Company, manufacturing a light and relatively low-priced car, which has been successfully introduced for taxi service, is running behind orders.

## Latin America Breaks Record

**J**N ordering 35,000 passenger cars and 7000 trucks from the United States in the first nine months of this year, Latin America has broken its own record as a purchaser of American motor vehicles. In these nine months, exports from the United States have more than equaled those of the entire year of 1923 and have set up new marks for future years to aim at.

In South America, the world sees the spectacle of a continent arising almost over night from a low plane of primitive locomotion to the most advanced type of modern motor transport. Here in this great land of the south, individual countries sound the whole gamut of possible conditions—geographical, climatic, economic. The development of such widely varied territories as may be found in Central and South America offers an illustration of what other quarters of the globe must some day experience.

Thirty-one national or territorial units may be considered as comprising Latin American. In size they range from Brazil, the largest nationally unified territory in the Western Hemisphere, to the comparatively tiny country of Costa Rica. In volume of automotive purchases, they range from Argentina, to which the United States exported more than 6500 passenger cars in nine months this year, to French Guiana, whose American passenger car purchasers numbered exactly two.

Totaling the thirty-one individual markets reveals figures of huge dimensions, and shows Latin America to be the greatest continental market in the world for automotive manufacturers and exporters of the United States.

## India as a Market

**T**HE total imports of motor cars for the quarter ended Sept. 30 numbered 2,299, as compared with 1,631 during the preceding three months. Of this number, 955 were from Canada, 974 from the United States, and 247 from Great Britain.

Imports of motor buses, vans, and lorries totaled 451, as against 265 in the second quarter. England supplied but 35 of this total, while the United States shipped 160, and other countries accounted for 256.

# Merchandising Stevedores Replacing Desk Lizards in Dealer Education Work

*"Find out what dealers need; don't theorize," expresses trend of present policies. Help being substituted for advice.*

WHY aren't the seats of the chairs at the Main Office polished with the usual High Gloss resulting from constant contact with an important part of the Male Clothing? What makes the factory sales office look like a Deserted Village? Where are all the fellows who used to sit still and write High-powered Pamphlets telling the boys in the field how to get that Tough Prospect to sign on the Dotted Line?

They're out in the sticks digging up facts, learning what the Sales Problem really is, and finding out What It Is All About. They're now in the process of getting the low down on why the Hard Facts don't always jibe with some of the merchandising Pipe Dreams that have been meted out to the dealers and labelled "Hot Stuff."

A few of the Old Guard still are left, of course. But they are only a remnant of the Famous Six Hundred whose it was not to Reason Why but to gaze into the crystal ball and put into Specific Terms for the edification of the Retail Trade whatever indistinct sales tableau their eager eyes might discern.

Sales department Desk Lizards are going the way previously traveled by Irish Snakes at the behest of St. Patrick. Verily, they are Getting the Air. They are being replaced by Merchandising Stevedores, whose aim is to develop Theories from Facts instead of trying to reverse the process.

ALL of which is one way of saying that a very definite trend has developed toward building the factory dealer education policies on the basis of first hand field knowledge. The rapid development of this tendency throughout the automotive industry is attested by numerous happenings of the last twelve months. To mention only a few:

Some of the most successful passenger car companies are making a strong effort to find out through personal contact just what are the dealers' problems. They are helping him to do a better job by providing him with practical assistance in bookkeeping and accounting; by training his service salesman as well as his service mechanic; by showing him how to handle used cars and then backing him up by refraining from forcing new cars on him; by giving him help as well as advice on any practical operating problem which arises in his daily business. Probably no single company is doing all of these things, but nearly every important producer is trying to find out what kind of help the dealer wants before deciding what sort of help to give him.

Accessory manufacturers and jobbers are gathering the same sort of facts. Following a detailed survey of the jobber field made by the Harvard Bureau for Economic Research, the chief thought of accessory men at the recent Automotive Equipment Association meeting centered around the question "What are the facts about distribution methods?" They are becoming immediately concerned with what is and not so much with what ought to be.

A Harvard Bureau survey has been made among tire retailers at the request of the Rubber Association of America. Again is exhibited the desire for the facts as a basis for reformulation of merchandising methods.

The National Automobile Dealers' Association has been engaged for some time in trying to learn exactly what is the matter with the dealer's business. The method chosen to achieve this end has been collection of specific information about the businesses of many retailers.

Examples could be multiplied. But all the straws point toward a new era in merchandising methods and in dealer education. The day of theories without facts has gone by and the manufacturer who expects to build and hold a really powerful dealer organization will recognize this condition and operate accordingly.

"How can you tell whether or not your dealer education work is getting across?" is a question which more than one executive has asked himself. It is all very well to work up pretty literature and to make vigorous sales talks but it is not always so easy to tell whether the material contained in them is really getting across.

Commendatory letters should not be taken too seriously. Every advertising man knows that with a little discreet suggestion any sales course, any merchandising idea, or any patent medicine can be made to pull a lot of testimonials which may mean much or which may mean practically nothing at all.

We all have a strong tendency to praise ideas or sales literature containing a lot of bromides which everybody admits to be true but which have been so oft reiterated as to have lost their punch. We read this sort of thing, say to ourselves "That's just the old bunk" and then, if requested, write a glowing commendation for the author because we feel that the material ought to be good for other people. We admit that we ourselves are too wise to take such stuff at its face value, but like to think that

others, less sophisticated and intelligent, will eat it up, throw their hats into the air, and proclaim it an intellectual feast.

When you get right down to it, there isn't such a tremendous difference as some of us like to think in mental levels between the various groups having to do with automobile marketing. We have met some country dealers that are just as wise as any factory sales manager we ever met, and some distributors whose practical money-earning knowledge is so great that it forces them to pay income taxes bigger than the salaries of some of the men who send them letters telling them how to run their businesses.

All of this is not in any sense a disparagement of the vast group of able men who are doing such an efficient job for the factory sales departments. It is mentioned simply to indicate that mental capacity doesn't vary directly with the occupation of a man and that all of us are a bit prone to praise commonplace educational efforts because we think they are good for somebody else.

#### Letters of Praise

So letters of praise shouldn't be accepted fully as proof of success in connection with dealer education. A man who devotes his entire time to dealer contact work with one of the most successful manufacturers in the business made some rather keen observations on this subject just the other day:

"I'll tell you how I judge the success of the work I'm doing," he said, reaching down in his desk drawer and bringing out a folder bulging with letters. "See these letters," he continued. "Some of them are commendations of the correspondence course for dealer salesmen that I am getting out. They are nice, but they don't mean much. But most of them are letters from dealers and dealer salesmen asking me how to solve some specific problem.

"Here's one fellow, for instance, wants to know how to 'get to' doctors, business men, and others who are 'too busy' to take a demonstration.

"Here's another who asks: 'Am I right in emphasizing the reputation, stability and ability of our company to serve him, when a prospect states that he has 'decided' to buy another make of car—or should I sell the 'superiority' of our car?'

"That's the sort of thing that indicates to me that this

salesman's course really is doing a good job. It is a worthwhile compliment to the course that all these men exhibit enough confidence in its author to ask him for additional help."

Probably this executive is right. Confidence expressed in a practical way is a better basis for judging efficiency than are mere compliments.

In planning dealer education work for 1925 the safe plan will be to find out what the retailers want in this line and then try to give it to them. A good many sales managers already have fairly definite and correct ideas

#### Do You Know—

What sort of dealer educational work produces the best results?

How do you know?

You may get a new idea from this article.

about what sort of material should be developed, but further investigations may alter viewpoints.

Opinions differ very much as to the relative importance of various phases of dealer education work. One big sales manager, for example, says that the best thing the manufacturer can do for a dealer is to be sure the latter is a good business man before he signs him up and lets him into the automobile trade. Another says that preparations and installation of standard accounting systems in dealer establishments will help the retailers more than any other single thing, and so on.

Getting facts before developing plans will tend to modify some views and confirm others—and will be in line with an unmistakable trend in current merchandising progress. Stevedores are not so high-hat as some other professional men, but they certainly do succeed in moving goods from one place to another—which after all is the chief function of marketing.

#### Conditions of Automotive Industry in England Discussed

**A**T the annual dinner of the Society of Motor Manufacturers and Traders, held in London on the occasion of the automobile show there, the president, Col. J. Sealy Clarke, gave some interesting information regarding the development of the industry and of motor traffic in that country.

The membership of the Society now comprises 95 British manufacturers of passenger cars, 90 British manufacturers of commercial and public service vehicles, 700 manufacturers of parts and accessories, 100 concessionaires for the sale of foreign cars and 1400 automobile dealers.

The total number of motor vehicles exclusive of motorcycles registered in Great Britain is now 712,900, as compared with 247,800 in 1919. But even if the motorcycles are counted, there is as yet only one motor vehicle to every 40 persons of the population in Great Britain, whereas in the United States there is one to every seven. As con-

cerns motor trucks, there has been an increase of about 50 per cent since 1914.

Intimately connected with the question of the extended use of motor vehicles is the condition of the roads. Dealing with this question, Sir Henry Maybury expressed the hope that the heavy commercial vehicles would soon more generally be shod with pneumatic tires, as this would tend to materially lower the expense of road maintenance. He expressed the opinion that the encouragement given to the use of such tires by the War Office subsidy conditions would help to save the roads.

Main and subsidiary roads in Great Britain aggregate 175,000 miles in length, and Sir Henry said the modernization of such a length would take many years, in spite of all the efforts of the Ministry of Transport. New roads also were wanted and the first job of the new Traffic Committee would be to do something to improve the road transportation in the London dock area.

# Unprecedented Activity in the Stock Market Gives Promise of Automotive Prosperity

*Political uncertainties are over for the next few years. Wholesale prices have averaged an increase of more than eight per cent since June. Stock Exchange an uncannily reliable barometer.*

By D. G. o'Connor

THE number of shares traded on the New York Stock Exchange since election day is unparalleled for any equal period in its history. What does this unprecedented activity mean to the automotive industry?

The stock market usually has been a remarkably reliable barometer for gaging general business conditions six months in advance. Business men, small and large, watch the daily movement of stocks because they have learned from long experience that market movements accurately foretell long in advance favorable or unfavorable movements in trade. Does the present unprecedented activity portend unprecedented prosperity or merely "boom inflation"?

Pre-election uncertainty is over. We know that for the next four years the Republican party is pledged to government economy, fair treatment for railroads, protective tariff and sound tax policies. Granting that this assurance is in favor of prosperity, some people are still crying "Wolf, Wolf." They assert that the present bull movement in the market represents inflation, and not sound prosperity, because of the abnormally large gold reserve in this country which in turn they seem to believe is responsible for the low rediscount rate, and which might lead to too broad a line of credit, and finally currency inflation.

The majority of competent observers, however, seem to believe that the present movement upwards anticipates excellent future business. They seem to feel that there is no comparison between this and the unsound and reckless bull market of 1919. They base their judgment on a number of key industries in this country and on international relations.

Improvement is not entirely in the future. There are plenty of signs of it in the present.

## Large Part of Wheat Crop Marketed

Agricultural prices have achieved and maintained very favorable advances. Wheat is selling today around one dollar and a half a bushel, and three-quarters of the crop is marketed. Last year at this time it was selling for just over one dollar a bushel. Corn which was selling around seventy-three cents a bushel at this time in 1923, is selling at about one dollar and fifteen cents now. Oats at this time are selling for approximately ten cents more a bushel than they did last year at the same time. Rye has almost doubled in price within the year.

Mail-order houses are already receiving a tremendously increased volume of business. The stock of one of the big companies has doubled in price on the New York Stock Exchange in a comparatively short period of time. The effect of prosperity on farm car sales can not be measured so easily or so directly, but the opportunity it offers and the promise that it gives has led to estimates of as many as five million cars for 1925.

Wholesale prices have advanced on an average of more than eight per cent since June. Money rates are lower than they have been for years. European uncertainties which stood in the way of foreign sales are disappearing with the successful working out of the Dawes plan. Surplus of exports over imports of \$217,000,000 in October was more than twice as large as that of October, 1923.

More than 1,000,000 tons of pig iron were taken in November and prices have arisen to the highest level since June. Steel production which fell to a low of forty per cent of capacity has risen to above sixty-five per cent.

That automobile production is increasing or is about to increase is indicated by the fact that motor and accessory manufacturers are receiving increased orders. The general opinion seems to be that with general prosperity on the gain there will be a brisk demand for motor vehicles in the early months of 1925.

## Railroads to Spend More Than a Billion

Railroad expenditures in 1925 are estimated at more than a billion dollars which assures prosperity and employment for equipment, locomotive, steel and affiliated industries.

Car loadings and freight traffic in recent weeks have made a new high for railroad history. The textile trade has been recovering steadily from its depression. Collections in all lines are improving rapidly.

And in the present bull movement in the market the Reserve Banks have the power to control and stop recourse to actual credit and currency inflation. Free from any pledge of a low rediscount rate they are ready for such prompt and effective action as may be required.

In a list of ten leading industries in the United States, four showed gains for October, 1924, according to one financial survey, as compared with October, 1923. Zinc, baled silk deliveries, mail-order and ten cent store sales showed an increase ranging from 0.9 of one per cent to thirty-seven per cent. The other six of the ten industries showed losses ranging from eight to sixty-nine per cent. Automobiles, tires and trucks as a unit were twenty-two per cent off.

An estimate made by the N. A. C. C., based on shipping returns, places October production of cars and trucks at one and two-tenths per cent below September production of this year and eleven and one-half per cent below October of 1923. The same figures show that the loss for the ten-month period of 1924 over 1923 is only seven per cent.

According to an editorial in *New York Sun*:

"The stock market is never an isolated phenomenon. It does not boil and seethe for its own amusement. Since the election results have been known it has been engaged in predicting future prosperity, and the stock market has always been the most uncannily reliable prognosticator of future business in existence."

# Job Study May Increase Production by 80 Per Cent

*Only twenty per cent of the attainable pickups in production can be secured through the efforts of the workmen themselves. There is no safe shortcut.*

By Henry H. Farquhar\*

MOST of the failures in serious attempts to increase the production in manufacturing plants through the development of better methods of management are directly attributable to two main causes:

1. The installation of some sort of incentive or production payment scheme (piece work, premium or "point" systems, task and bonus, or combinations of these) before the necessary foundation has been laid; and
2. The installation of methods and mechanisms not suited to the particular problems and conditions of the business in question.

I recently watched a workman perform a simple drilling operation on a brass rod. First he had to hunt under a nearby bench for a fixture, then he had to go to a neighboring machine and borrow two different sized "S" wrenches. Finally, he got the rod clamped and the chuck ready. He then felt in his overalls pocket and brought out some ten penny nails, a couple of machine bolts and a plug of tobacco—but not the drill he was hunting for.

He inquired around and finally procured the drill from among a similar miscellaneous collection in the pocket of a neighboring workman. He set the drill and started his work. I was somewhat curious as to why the actual drilling took so long and asked him to let me see the tool. Both cutting edges were dull along their whole lengths and nicked in several places. This is an actual case, not in the least exaggerated, and occurred in a shop quite as well run as the average. The workman had taken twenty minutes to complete an operation which at the most should have required less than ten.

Let us assume now that the manager of the plant in which this workman was employed felt the need for an increase in production with a corresponding decrease in costs—a need keenly felt by manufacturers today. Assume also that this manufacturer has been sold to the idea that what he needs is the so-called short cut to production increase—a production payment method—and that he does gain the workman's cooperation in making a time study, establishing rates, and introducing one of the many incentive payment plans.

## Looking for Tools

Can you visualize this workman hunting fixtures under the benches; can you imagine him hustling around to find the right size drill; can you see him forcing the dull drill through the rod with all his might under the spur of additional pay? Perhaps you can visualize the increased output which he will undoubtedly get through his individual hustling. But can't you also visualize how, after a few days of this sort of thing, he becomes disgusted at trying to do his own work and the management's too, and throws up the job with, "Oh, hell, what's the use?"

\*Résumé of a paper delivered at the National Tool Builders' twenty-third annual convention.

How much of the workman's time could have been saved to be devoted to the actual drilling operation if the management had first taken upon its shoulders to see that when this workman was asked to drill this brass rod he had been previously supplied with the proper fixture, the correct sizes of "S" wrenches, the right drill in standard condition and, in case any doubt could possibly exist in the worker's mind, with definite instructions as to the best known way of performing that operation?

It is significant in this connection that those who have had most to do with developing high production management in assembling industries are generally agreed that of the production increases secured through thorough development of improved methods, about 80 per cent has been effected by the *management* in its scientific study and adjustment of just such details of preparing the job before it is put into the hands of a workman at all; in other words, of attainable pickups in production only 20 per cent, or even less, on the average can be secured through efforts on the part of the workmen themselves.

## Direct Labor Cost

The direct labor cost, furthermore, is in few industries as much as 40 per cent of the total cost of the product. A pickup then of 20 per cent, affecting a direct labor cost of 40 per cent of the total, gives only 8 per cent as the maximum total cost reduction which can be expected from labor itself. Even this 8 per cent, however, may not be a permanent gain if the methods used in inducing it are such as to destroy the confidence and the morale of the workmen.

It is interesting in this connection to note that in really thorough developments of all functions of management, both the total and the direct labor cost reductions have in many cases been two, three or even four times as much as was contributed by the workmen alone. I believe these facts will become apparent when it is recalled that in the average machine shop probably 50 per cent of the day consists of machining time when the workman has little to do anyway.

But supposing our manager did, through his appeal to the workmen, effect this 20 per cent increase in production, what is likely ultimately to happen? Another story taken from actual experience will illustrate. A blacksmith, whom I knew very well, went to work in a plant where there seemed to be prospects of high earnings through the management's desire for increased output. The shop was well equipped with the very best forges, tools and machines and the firm was swamped with work. The blacksmith's story runs thus:

"Morning after morning I went to work to find the fire out in the forge and I had to collect my fuel and start my fire; then often I had to hunt about for tools which the night shift had 'borrowed' from me, clear out the clutter

from around my forge and then like as not stand around for a half or three-quarters of an hour waiting for the foreman to assign me a job. Though I reported for work at 7.30, it was often 9 or even 10 before I got started. I called the boss's attention to this one morning, and his reply was, "What's that to you? You get paid for your time, don't you?" When I go to work, I want to work; otherwise I'd rather stay home." He finally quit in disgust.<sup>20</sup>

Here is a perfect illustration of conditions which the workman is powerless to remedy, and which prevent him, no matter how hard he tries, from increasing his output beyond a very moderate amount. Emphasis has been placed on the provision of suitable tools—but this alone is not enough, for in this and many similar cases we have the very best of equipment, maintained in the best condition, yet lack of good planning, lack of preparation of materials, orders and tools, lack of scheduling and dispatching—lack of proper performance on the part of the management, in other words—absolutely prevented a reasonable day's work on the part of the workman.

### The Boss's Attitude

Or take the case of another workman in one of the largest plants in New England who entered wholeheartedly into the firm's project to increase production and in his effort to speed up his own work came upon the idea of a simple jig which enabled him to turn out per hour four times as many parts as the time study man had set as standard. But was the boss pleased when he heard about the new jig?

Decidedly yes, until he found that the workman's pay envelope also called for four times as much as before, more even than his foreman was getting. That would never do. A consultation was held and the workman's allowed time was reduced 25 per cent so that he must produce four times as many pieces per hour to receive his hour rate of pay—the same pay he had received before he tried to speed up.

I leave it to you to guess the result from the standpoint of the workman. It does not matter whether such reduction takes the form of a lower price per piece, a decreased allowed time for a given number of pieces, a lower value of work expressed in terms of "units," "points" or other camouflaged expressions—the effect is the same and there can be but two possible results: (1) The loss of the workman, or possibly of the whole shop in extreme cases, or (2) systematic slowing down of production with destroyed confidence and morale.

Even if the workmen had not given up their jobs as they did in each of the two cases cited, workmen are but human and it is too much to expect that for any continual length of time they will put forth all efforts toward increasing production when all about them they see manifold evidences of lack of similar effort on the management's part.

### Speeding Up Workmen

Let me repeat, there is no permanent short cut to increased production and decreased costs through speeding up the workman by any incentive plan. Even if a management does succeed through such appeals in spurring the workmen on to an increase in production and a decrease in cost, trouble is almost sure to come later on when the workmen realize that most of the burden has been passed to them.

The wiser managers of today believe that incentive payment, instead of being of first importance, should in nine cases out of ten be the last thing to tackle—if, indeed, it is necessary at all except as it helps to bring pressure on the management for the continuous discharge

of its proper duties. The more forward looking take the attitude illustrated by that of two managers with whom I have done advisory work. Each of these men said in substance:

"I am not going to appeal to my workmen through incentive methods of wage payment, profit sharing, or in any other way to increase their individual production until we have tightened up our own work in several particulars. It is useless and unfair to expect them to respond permanently until we, the executives to whom they look for leadership and example, have done our own share toward securing high production and low costs."

### Making It Possible for the Workman

Each manager recognized that any appeal to the workman to give his best toward high production has met with lasting success only when conditions have first been made such that the workman *can*, if he wants to, produce a big day's work, and second, when he has been put in a frame of mind where he will actually want to. They recognize that bringing both of these conditions to pass is distinctly a management duty, and that until the management has seen to it that its own part is fully played—through careful standardization, effective planning, detailed scheduling and all of the rest—the incentive appeal will meet with only half-hearted or temporary response.

Both of these manufacturers know that it is comparatively easy to secure increased production in any non-standardized, day work plant. It has been done time and time again and is constantly being done today. They know, however, that there is little credit and no satisfaction to be gained by having a slight per cent increase handed to them when by really doing their own job properly they could secure twice this increase, and they know that these smaller increases, secured through the artificially stimulated efforts of the workmen, tend gradually to diminish to the vanishing point.

They know, too, that as a consequence, where there is one lasting example of the best in modern management, properly applied, there are actually hundreds of cases of failure—failure because the much-advertised mechanisms of management were mistaken for the real fundamentals, and because some sort of payment system was mistaken for a philosophy or system of the whole of management.

### Manager Prepares the Way

The manager who has not been beguiled by alluring short cuts, but who has honestly assumed the full 80 per cent of his share in this road to high production, has first put his own house in order. To do this he has first made a careful *investigation and analysis* of his particular problems in the light of local conditions to find out what is wrong and what general type of remedy is needed. Because some plan or mechanism has worked well in his neighbor's plant is no assurance whatever that it will work well in his.

Many instances have occurred of a perfectly scientific and forward looking plan of management having been discounted and thrown out simply because the particular methods and mechanisms employed were entirely unsuited to the peculiar problems which that business presented. The fault was in no wise with the general principles followed, but only with the specific methods employed. His form of organization, his production and cost system, his material control methods, his labor policies—all of these have been carefully adapted to his own particular problems and conditions.

Having decided on a general policy, the manager then insists upon thorough *standardization*—determining just what should be done, how best to do it, and enforcing this way in practice until a better way be found. Standard-

ization is the very foundation upon which advanced management methods must rest and as an integral part of it must go rigid maintenance of such standards as have been set up. It is not all, but a very large part of management.

Next in importance comes the *planning and preparation* of work—deciding in advance what has to be done, where and how to do it, and providing and controlling all necessary standard tools and instructions and programs for the work. Only through previous standardization of all elements of the work can accurate plans be made in advance and definitely controlled in practice.

*Scheduling*—determining when each part of the work is to be started and finished so as to secure maximum use of facilities and labor.

*Dispatching and Producing*—issuing the orders and actually doing the work in accordance with the plans and times previously determined, and paying for what is done.

*Measurement*—the gaging of results, through the use of inspection, cost, statistics, and executive reports—the comparison of what *has* been done with what *should have* been done.

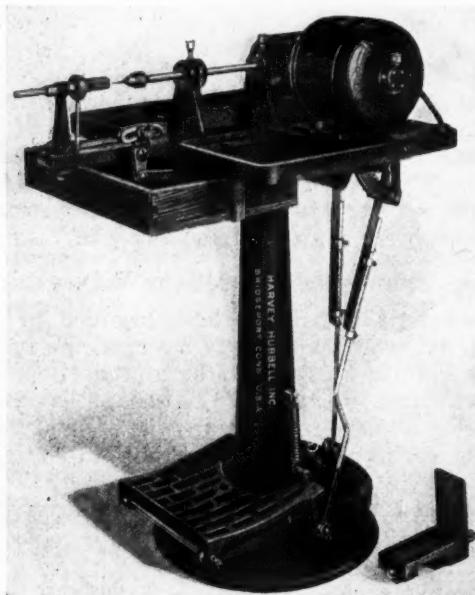
*Organization*—the determination of responsibilities and working relations between the various members of the personnel so as to make maximum team-work possible.

*Questions of Labor*—the problem centering about human relations in industry to the end that there may be maximum satisfaction all around. It will be observed that questions of methods of paying workmen form only one part of one of these eight functions.

The scientific rounding of these management duties into a well regulated machine has formed the very foundation upon which good industrial administration—the balanced control of all parts of the business—has rested. When this has been done, then let there be incentive payment—if conditions in your particular plant seem to demand it—but only after you, the manager, have fully performed your 80 per cent of the task of running a thoroughly scientific business, and high production with accompanying low costs will be sure to follow, taking care, however, to look upon any incentive method you may select as merely a small part of your composite plan—not as a short cut to high production.

## Motor-Driven Tapping Machine and Industrial Truck Put on Market

**H**ARVEY HUBBELL, INC., Bridgeport, Conn., have recently put on the market a line of motor-driven tapping machines, one type of which is shown herewith. These machines are operated by means of treadles which control both the motor switches and the application of power to the spindles. Motors and spindles are provided with double thrust ball bearings. No gears are used. Types are made for drilling one hole and for drilling

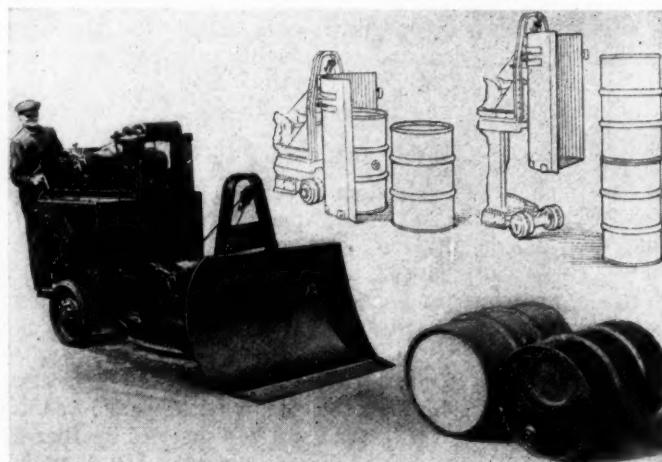


Hubbell tapping machine which uses no gears

two or three holes simultaneously. The capacity of the machines depends on the kind of work, thin brass pieces being tapped at the rate of 10,000 to 40,000 holes per day, it is claimed.

### Industrial Truck Handles Barrels, Etc.

**A**N electric industrial truck fitted with a device for picking up bulky loads, such as barrels, boxes, bales, etc., transporting and stacking them, is being marketed by the Elwell-Parker Electric Co. of Cleveland, Ohio. As seen in the accompanying cut, the truck carries a

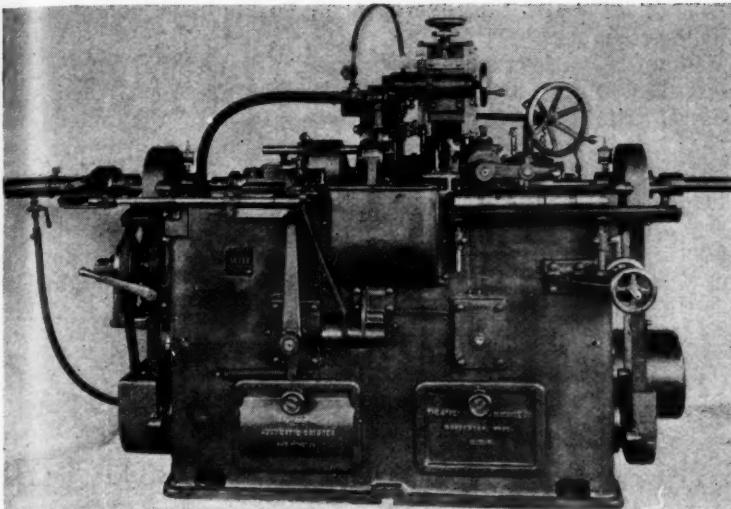


Elwell-Parker industrial truck with cradle for picking up, elevating and stacking load

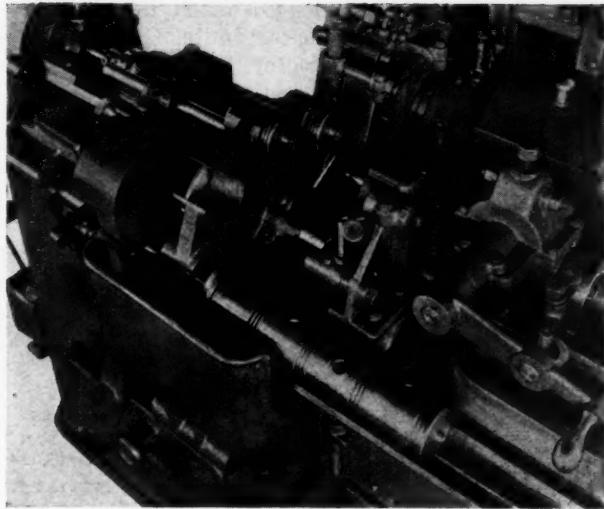
swiveled cradle which is made to accommodate the load to be carried. This cradle is raised or lowered as much as 6 ft. by operating the elevating platform, while it can be turned from a horizontal to a vertical or any intermediate position by use of an additional hoisting unit.

Power for operating the elevating and swiveling devices, as well as for moving the truck itself, is furnished from a common storage battery, with suitable controls for each. Safety devices fitted include one which causes the elevating motor to stop instantly if the cable becomes slack when lowering a load. The truck and all mechanism are designed for one-man control.

**A** GAS-ELECTRIC locomotive, built by the General Electric Co. and employing a 300-hp. Ingersoll-Rand oil engine, has been placed in service in the freight yard of the New York Central Railroad in New York City for hauling and switching freight cars. The engine is of the six-cylinder type, with direct injection of fuel (fuel oil) and is direct-connected to a General Electric 200-kw. generator, from which current is supplied to four 100-hp. motors. It is claimed that the cost of the fuel oil consumed is very much less than the cost of the hard coal used by a steam switching engine.



Arter automatic cylindrical grinder



Set-up for grinding pistons

## New Cylindrical Grinding Machine Will Load, Grind and Eject Parts Automatically

*In new Arter machine parts are loaded into turret mechanically or by hand, moved to grinding position by indexing, ground by straight infeed of wheel and then ejected.*

**A**N automatic cylindrical grinder in which automotive parts, such as engine pistons, valve plungers, wrist pins, bearing rollers, etc., can be ground with a minimum labor cost, has been developed by the Arter Grinding Machine Co. of Worcester, Mass. The machine is capable of grinding work up to 5 in. in diameter and 5 in. in length, the maximum distance between centers being 12 in. For motor drive a motor of from 10 to 20 hp. is required, according to the work.

The machine grinds by the straight infeed, either straight cylindrical or tapered surfaces of parts that can be held on centering devices. The work may be loaded into the turret either by hand or automatically. In the illustration shown, the turret is designed to take pistons, these being inserted by hand. As the turret indexes to the grinding position, the work is automatically picked up and driven by the centers. Ordinarily the driving effort is derived from a spring behind the tailstock center, but in grinding pistons use is made of an auxiliary driver inside the work.

As soon as the work is indexed into the grinding position, the wheel automatically feeds in and grinds it. At the end of the instroke it dwells for a sufficient length of time to permit it to grind clear. Successive indexing movements bring the work opposite a chute, onto which it is automatically discharged. All movements are cam-controlled and are easily timed.

One turret is provided with the machine, the number of holes being made as great as the diameter of the work permits. While the indexing action is rapid and permits the grinding wheel to be in action practically all the time, it is claimed to be very smooth. The turret is split to permit quick changing. Sufficient clearance is provided in the holes so the work can revolve freely when on the centers.

The wheelhead, which is mounted on the rear of the bed, consists essentially of two parts, a base and the wheelhead proper. The base is pivoted so that the wheel can be swung till its face makes an angle of from 0 to 5 deg. with the work. It can be set accurately to any angle within this range by means of graduations and adjusting screws. The wheelhead travels on one Vee and one flat way, and is moved toward and away from the work by means of mechanism operated from the camshaft.

### Wheel Spindle Support

The wheel spindle is supported in two split, straight, bronze-bushings, which are set into tapered holes. At the wheel end the bearing is of 3-in. diameter, while that at the opposite end is 2½ in. The bushings, being split and supported in tapered seats, can be accurately adjusted. To prevent grooving, the wheel spindle is oscillated longitudinally in its bearings, which is claimed to have an incidental advantage in resulting in nicely running in the spindles and bearings. Lubrication of these bearings is effected by means of a pump from a reservoir in the wheelhead through sight-drip feeds. Being located at one end of the spindle, the wheel can be removed readily. The pulley on the spindle is located between the bearing housings, which are directly over the wheelhead ways. Belt tension is provided by an idler pulley running on ball bearings. Wheel wear can be compensated for by means of a micrometer adjustment.

A wheel dresser is carried directly on the wheelhead and can be operated with the work in place. The diamond is fed toward the wheel by a handwheel with micrometer adjustment, while its longitudinal travel is controlled by a hand wheel.

On the camshaft there are cams for controlling the movement of the tailstock spindle, the wheelhead, the turret and the work ejector. The wheelhead cam is split for quick removal when changes are to be made to meet different grinding conditions. The camshaft receives its motion from a secondary shaft through a cone clutch and reduction gears. This clutch may be disengaged at any time by means of a hand lever at the left end of the bed.

A tank and pump of the submerged centrifugal type, bolted to the rear of the machine, provide a generous flow of coolant to the grinding wheel, and means are provided, when necessary, to carry coolant to the inside

of the work, the tube entering through the center of the headstock.

All pulleys and shafts are balanced, the main shaft, secondary shaft and idler all running on ball bearings. Particular attention has been given to the means for lubricating all moving parts, and ample guards are provided.

Production on pistons is 4 per minute on the roughing and 3 on the finishing operation. The wheel used in the roughing operation is step-dressed, so that the ring belt is finished round and the skirt is roughed at the same time. The finishing operation is on the skirt only.

## Ring Gear Among First to Receive Individual Heat Treatment

ONE of the outstanding problems in heat treating, that of eliminating warpage of ring gears while they are being carbonized and heated for hardening, is still unsolved, and any advancements made in the methods employed are of interest to all concerned.

As has been mentioned in a previous article, the nearer we approach "individual heat treatment" of parts, the nearer we approach the goal of perfection.

The ring gear was practically the first part in the automotive industry which was handled individually in the heat treating operations. This was brought about by the advent of the Gleason quenching machine, a machine which has now become a necessity in the production of ring gears, taking into consideration the close limits to which they must be held with regard to flatness and out of round. It is the manipulation of the Gleason machine with respect to dies, air pressures, etc. that determines the accuracy of the hardened gear, and not the method of heating. The warpage that must be removed from the gear is that produced during the carbonizing operation, and which is not removed by any known practical method of heating for hardening.

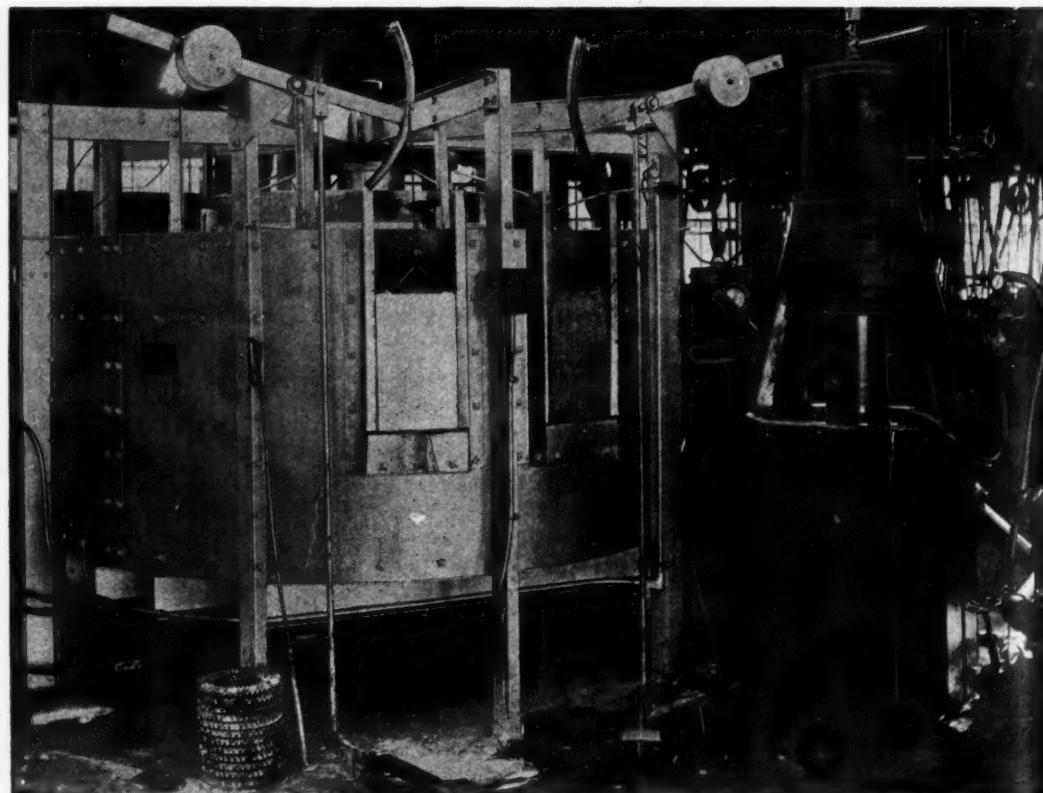
Elaborate conveyor type furnaces have been designed and built for the heating of ring gears for hardening, the purpose being to allow the gear to lie flat in the heating chamber and to become heated uniformly. In some instances large muffle type furnaces are used and the gears laid flat on the chamber floor or on a plate within the chamber. These furnaces have merit and are serving their purpose.

The Studebaker Corporation has installed a furnace for heating ring gears, which is unique in its construction. It was built by the Electric Furnace Company in accordance with our ideas. The ring gears are hung on

hooks, and heat is applied on three sides by electrical elements. The hooks, which are placed  $4\frac{1}{2}$  in. apart, revolve in the furnace, the loading and discharge doors being side by side.

The photograph illustrates the general appearance of the furnace. The overall diameter is 7 ft. 6 in. and the capacity, 50 gears per hour. At first thought the hanging of the gears would seem detrimental, but such is not the case. Good features of this furnace include the uniformity with which the gears are heated (there being nothing to prevent the heat getting to every surface), the compactness with large capacity and the ease with which all loading, unloading and operating of the Gleason machine is accomplished.

**S**TUDIES of the protective value of nickel plating on iron and steel, made at the Bureau of Standards, have shown it to be very difficult to secure an impervious deposit.



Furnace for heating ring gears for hardening in Studebaker plant

# Lockheed Develops Internal Brake of the Three-Shoe Type

*Actuated in the same manner as in the external hydraulic equipment, this new device utilizes the wrapping action between brake and drum to reduce required pedal pressure.*

THE Hydraulic Brake Co., Detroit, owner of the patents covering Lockheed hydraulic brakes, has developed an internal brake of the three-shoe type in which the wrapping action between brake and drum is utilized to reduce the pedal pressure required to apply the brakes. Moreover, the degree of braking obtained with the new design is said to be directly proportional to the pressure applied to the pedal and at all times entirely under the control of the operator. Numerous advantages from a manufacturing standpoint are also advanced for the new brake.

The brake is actuated in the same manner as in the external hydraulic equipment. Referring to the accompanying drawing, when pressure is applied to the brake pedal, the two opposed pistons in the operating cylinder move outward, forcing the primary shoe 1 and the reverse shoe 3 into contact with the brake drum. The latter shoe and the secondary shoe 2 are pivoted to the anchor pin 10, which is mounted on the dust shield or non-rotating part of the brake. The primary shoe is mounted on the floating pivot 8 at the free end of the lever 4, which in turn is carried by the anchor pin 9 on the dust shield.

As the primary shoe grips the drum it moves downward, swinging the lever 4 about the anchor pin 9. The downward force developed by the primary shoe is tangential in direction and, as the pin 9 lies close to the radial line through floating pivot 8, this force acts at right angles to its lever arm, so that the maximum leverage is obtained.

## Compression Link Almost Vertical

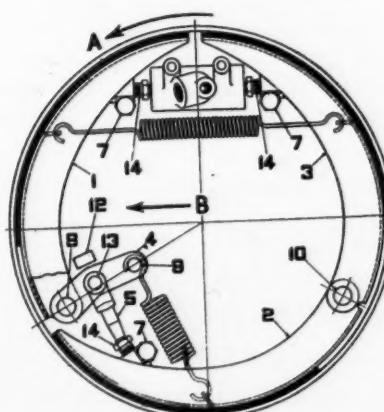
Midway between pins 8 and 9 is pivoted the compression link 5, which is so located that it is approximately perpendicular to a line joining these two pins and, consequently, the leverage at this point is also a maximum. The force transmitted by the compression link and acting on the adjusting screw 14 on the secondary shoe 2, forcing it into contact with the drum, is twice as large as the force applied to pin 8 by the downward movement of the primary shoe, due to the central location of pivot 13 on lever 4. Of course, the multiplication obtained in this way can be varied at will by changing the position of pin 13. There is no tendency for lever 4 to swing the primary shoe into or out of engagement with the drum, as pins 8 and 9 lie in a radius of the drum and the lever has only a very small angular movement. In the released position, this lever is held against stop 12.

Adjustment of the brake is effected by loosening the three lock screws 7, turning adjusting screws 14 to move the shoe into contact with the drum, and then backing them off slightly.

It is claimed that the brake shows no tendency to lock and that an increase or decrease in pedal pressure im-

mediately produces a proportionate change in the degree of braking. In addition, with drums of ordinary dimensions, this design is said to put sufficient effective brake lining in contact with the drums to produce efficient braking.

Drum distortion has been the cause of considerable trouble with internal brakes, and these difficulties are said to be avoided in the Lockheed design, because the braking forces are applied at three points. Consequently, leverages can be increased and the pedal pressures and travel required reduced. This is an important feature, for the



Lockheed three-shoe brake. (A is the direction of brake drum rotation when car is traveling in the direction B)

reason that where drum distortion is present, the leverages must be arranged to force the lining into contact with the drum under all conditions, and this necessitates the use either of high pedal pressures or long travel if the brake is to be safe. To avoid these difficulties very rigid drum construction has been used in some cases but this, of course, adds to the cost of manufacture.

Brakes for front and rear wheels are identical, and rights and lefts are also the same except for the operating cylinders. Another advantage from the production standpoint is that the brake may be assembled completely on the bench and then bolted or riveted to the brake flange on the axle or knuckle. The three shoes are identical and are pressed out of  $\frac{1}{8}$  in. stock, the only machine operation being the reaming of the anchor pin holes.

IT is shown by the recently issued annual report of the British Directorate of Civil Aviation that commercial flying in the United Kingdom has increased each year since the establishment of commercial flying services in May, 1919, with one exception. During the year which ended March 31, 1924, the total of air transport flying by licensed British machines amounted to 1,004,000 miles made in 5012 flights.

# Are Your Returns from Advertising What They Should Be?

*If not, what is the reason? Overstatement of fact, careless language in advertising a guarantee, copy that "knocks" the product of a competitor militate against sustained sales.*

By B. L. Shinn\*

*Special Representative, National Vigilance Committee, Associated Advertising Clubs of the World*

THE question confronting every advertiser today is—"Are my returns from advertising what they should be?" "Am I getting maximum results from my expenditures? If not, what is the reason?"

The Associated Advertising Clubs of the World has been studying this problem for the past twelve or fifteen years. The underlying cause for advertising not stimulating sales as it should, is that the public as a whole, do not have sufficient confidence in what they are told through the printed word.

I want to present a few suggestions as to how belief in advertising and advertised products can be sustained and good-will and public confidence promoted.

An advertisement is a cold statement of fact which is taken into the average home and carefully analyzed

much to direct the trend of all advertising of such commodities.

When we were in our teens we all played the game of "Follow the leader." We are grown now, yet it is surprising how we still, in our business and social life, follow the lead of some one. We don our straw hats on a certain day, regardless of the state of the weather. And we discard them in unison in the same fashion—all because the other fellow does it and we do not want to be different.

## Establishing a Precedent

It is human nature and it holds true in advertising. You are daily setting an example in your copy for others in your industry to follow. To a large degree you shape by your language and methods what will appear in automotive advertising. Is that example a constructive, a haphazard or a destructive one?

If the leaders in any industry confine their advertising to a strict exploitation of the particular thing which they have to sell, setting forth its special virtues or attributes in conservative language—the imitators are very likely to adopt the same line of procedure.

But if the leaders, instead of following a conservative policy, make use of general superlative blanket statements—the industry as a whole will soon follow suit. This brings about a rather serious situation. Let us say, for example, that there are a dozen different batteries all advertised as "the most powerful battery built," "the battery having the longest life," "the best battery on earth," etc.

Instead of upbuilding confidence in advertising, and stimulating a demand for any particular make or type of battery, users are confused by this sort of copy. They do not know what to believe and the net result is they become suspicious of all advertising.

I have used the battery industry here as an illustration simply because I happen to be more familiar with it than I am with certain other classes of automotive equipment advertising. But what is true of batteries is just as true of other items.

It is said that the longer a nation has engaged in commerce, the more honest you will find its merchants in business dealing. The British and the Chinese are especially cited in this connection as examples. So it is when we sit down and study advertising. We find the oldest and the most successful concerns are those which have followed an ultra-conservative policy of statement. Yet their copy has built public confidence and good-will, and their goods have continued on the market when those of others have come and gone.

U. S. Tires have had a steady increase in sale, year by year. They were initially launched in a highly competi-

## "DANGER!

"Two Fires This Morning Originated  
from Oil Stoves  
"Burn Gas—Play Safe!"

and dissected. There are no surrounding circumstances to lend it color nor salesmen's personality to give it a friendly touch. For these reasons it must be able to withstand the acid test of deliberate appraisal, and it cannot do this and at the same time inspire confidence unless it is absolutely truthful. False representation of an article may stimulate initial sales, but it delivers no repeaters, and the reaction therefrom shakes the confidence of purchasers in advertising generally.

But you say—"Why tell us this, we are not publishing untruthful copy, nor misrepresenting what we have to sell." I do not mean to imply that you are, but there are those in your industry who do falsely advertise goods, and so long as they continue this course, you, as an advertiser, must bear your part of the public reaction. Therefore, it is time you consider what you can do to aid in eliminating this admitted evil and bringing advertising in the automotive electrical field up to the proper plane.

You gentlemen represent the leading manufacturers and distributors of batteries, starting, lighting and ignition equipment, magnetos, timers, etc., in the United States. As such you have it within your power to do

\*Excerpts from an address delivered before the Automotive Electric Association at White Sulphur Springs, West Va.

tive field in which a number of others were already established. They have been chiefly exploited as "just a good tire," in contradistinction to the advertising by competitors of "puncture-proof tires," "tires guaranteed for 15,000 miles," "better tires," etc. The latter have passed on, but the tires of the U. S. Rubber Company are still with us.

#### Use of Slogans

Take the famous Packard advertising slogan, "Ask the man who owns one"—what could be more conservative? But, at the same time, how far could the maker of an inferior car get by imitating it?

A friend of mine had occasion to make inquiry as to the value of certain advertising slogans. A surprisingly large number of people identified "It floats," "Eventually, why not now," "His master's voice," "Chases dirt," "A skin you love to touch" and similar statements, which directly referred to the character or quality of the product advertised. In contradistinction, a very small per cent were able to name the advertisers using the slogans "Standard of the world," "America's oldest silversmiths," "Originators of evaporated milk," "The world's greatest newspaper" and "None better at any price."

I mention these facts simply to show that while you are helping mold advertising to a better form by abstaining from the use of extravagant or blanket statements, you are at the same time doing yourself no harm.

While on this subject of the use of conservative language, I would especially urge that careful scrutiny always be given advertising copy which mentions or quotes guarantees. What particular guarantee a manufacturer may desire to give is a matter for him alone to determine.

It may simply cover defects in workmanship or material, or it may be in effect, insurance of service for a definite period. It may be conditional or it may be unconditional and absolute. The form makes no difference, but be sure that the guarantee as you describe it in your copy squares with the contract of guarantee which you give to purchasers.

#### Copy with a Flareback

Careless language in guarantee advertising causes a direct flareback, for purchasers are prone to interpret everything in the most favorable light to themselves.

Make your copy clear in this respect by stating every condition, if there are any, and don't run the chance of losing your customer's confidence.

This brings us down to the next point that I want to make, which is, are you advertising your product for what it is or what it will do, or are you endeavoring to excite public interest by comparing it with competitive articles?

Under the erroneous impression that an effective means of stimulating sales is to publish copy disparaging the goods of competitors, we have found numerous advertisers in numerous fields laying down the pen, pushing aside the typewriter and taking up the hammer. So pronounced has this tendency become in certain groups that the National Vigilance Committee was compelled to take cognizance of the situation.

Advertising succeeds in overcoming sales resistance, in direct ratio to its concentration upon creating and sustaining a market for the product advertised. It fails in direct ratio to its divergence upon such contingencies as the disparagement of competitors or their products.

The experience of the National Vigilance Committee over a period of some twelve years of operation is that every "knock" of a competitive product is an open invitation to the competitor to strike back.

A graphic illustration occurred recently in a certain western city. A local dealer, in an attempt to increase

the demand for gas stoves, began featuring in his advertising the accidents which followed the use of oil stoves in certain instances. Once embarked on this policy his copy soon read like this:

"DANGER—Two fires this morning originated from oil stoves. Burn gas—play safe."

"Four fires originated from oil stoves in this city during the past 72 hours. Overwhelmingly convincing evidence of the tremendous hazard the oil stove is in our community."

The local hardware dealer, with a big stock of oil stoves, happened to be red-headed. He began looking up statistics, gathering notes from the Health Department

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"Explosion of gas stove kills mother and injures infant.

"Use oil stoves and avoid the danger of death or disfigurement!"

---

and other sources. About the second week after the gas stove advertising appeared his counter-campaign opened with the headlines:

"Whole family asphyxiated by gas. Play safe. Use oil!"

Later copy stated:

"Explosion of gas stove kills mother and injures infant. Use oil stoves and avoid the danger of death or disfigurement."

The dealer in electric stoves scanned with interest the copy of both rivals. He said nothing, but continued to advertise the merits of electric ranges. His sales record exhibited a sharp upward curve.

Using battery advertising again as an illustration, we found here some time back that certain manufacturers of semi-dry batteries were attempting to exploit same by printing in two columns the respective strong points of their own product and opposite, the corresponding weak points of wet batteries. As it happened, the statements pro and con were so exaggerated, although some of them had a semblance of truth in them, as to make the whole copy illegal advertising, and by pointing this out to the advertiser in question we were able to have the practice eliminated.

#### For Instance

For the sake of illustration, however, let us suppose that these manufacturers had gone ahead and that the wet battery manufacturers had instituted a counter campaign, pointing out as they could, the strong points for the wet battery, and the corresponding weak points of the semi-dry product. What would have been the effect on the public? They would entirely have lost sight of the good qualities of both types of batteries for certain purposes and would have concluded that none of them were fit for use.

No discussion of advertising in the field of automotive equipment is complete without some reference to the matter of substitution of parts.

Cheaper, and sometimes inferior parts, have been sold by dealers and other advertisers under the representation that they are parts made by some well-known manufacturer. This is not only bad advertising, but it is illegal advertising, as the National Vigilance Committee re-

cently demonstrated through the prosecution of two battery service stations in Ohio.

The one point in this connection to which I desire to call particular attention is that you should not go too far in your sales propaganda. A service station dealer has the right to sell parts made by anyone, just as they have the right to sell replacement batteries, or ignition, starting or lighting equipment of a different make from that supplied by the car manufacturer as original equipment.

### Substitution of Parts

But whether it is parts or equipment that is sold, the purchaser has the right to know who made it and to exercise freely any preference he may have. Only when he is deprived of this right and has goods of one make sold him as those of another, is the law violated.

Not only can advertisers, by a careful edition of copy aid greatly in bringing about better advertising conditions in an industry, but publishers can likewise give material cooperation. It is our experience that contracts for advertising space are made with the provision that the publisher reserves the right to alter or revise copy submitted.

The Associated Advertising Clubs of the World stands ready at all times to place at a publisher's disposal any facts which we may have regarding the accuracy of advertising copy. There are, likewise, many other avenues of inquiry. With the facts before them or readily available, I am frank to say that I see very little reason or ex-

use for the continued publication of downright false and misrepresentative copy.

It is our experience that trade papers, as a general rule, exercise a more strict censorship over what appears in their columns than do the average run of newspapers, and other publications. In reference to some of the latter, we receive complaints every now and then to the effect that improper advertising continues to appear in their pages, even after the facts are laid before them.

Under the law we can't go to such publishers and tell them point blank that unless such copy is eliminated we will urge legitimate advertisers to boycott them, as such a procedure would quickly be condemned by any court as a criminal conspiracy. But you gentlemen, in your individual relationships to a publisher, are in a different category.

We may never succeed in bringing advertising to that point where it will be entirely free of all ambiguity and misstatement, and where it will return a full 100 per cent on the amount invested. But, if the honest forces within the advertising fraternity will work together we can make conditions many times better than they are today. The Automotive Electric Association, through its activities, has done a great deal to remedy certain abuses which were heretofore existent in the automotive field. Your success has been in no small degree attributable to the fact that it was a joint undertaking. Let us have the same team work with reference to advertising, bearing in mind at all times that honest advertisers of honest merchandise must stand or fall together.

## Aluminum Bronze for Automobile Parts

**I**N the course of a paper read before the Institute of Metals recently, W. M. Corse, metallurgist of the International Nickel Co., said that aluminum bronze was a non-ferrous product very largely used in the United States. Its outstanding property was its resistance to corrosion and to alternating stresses, while in hardness and strength it was comparable with steel, and like steel, special properties could be imparted by heat treatment.

The 10 per cent alloy as cast, had a tensile strength of 74,500 lb. per square inch, and an elastic limit of 19,800, while the elongation was 19.5 per cent, and a reduction of area of 23.7 per cent. The addition to this of 1 per cent lead gave a tensile strength of 72,600 lb., a yield point of 25,100, while the elongation and reduction of area were increased to 25 per cent and 26.9 per cent respectively. The addition of iron to the alloy raised the strength and the elastic limit. Alloys of large cross-section were self-annealing, but with the addition of iron they were no longer self-annealing. For worm gear-wheels it had been found advisable to keep the aluminum between 10 per cent and 11 per cent, brittleness being the result of a larger proportion.

The alloy was free from hot shortness, and could be rolled and forged hot, and could be cast in metal molds. This latter property had led to a very extensive use of the alloy for automobile parts. Bevel gears thus produced were used as cast, and such castings were extensively employed by the Ford Company, who since 1916 had used 11,000,000 lb. of such castings for the worm wheels of their 1-ton truck and 2,000,000 lb. for other parts. The results had been most satisfactory. For six years there had been no failures at all and since 1922 the total failures recorded had not exceeded 2 per cent.

More recently, the worm wheels had been made with

2 per cent of lead added to the aluminum-bronze. This alloy had a tensile strength of 82,200 lb. per square inch, a yield point of 30,700 lb. per square inch, an elongation of 15.3 per cent, and a reduction of area equal to 16.0 per cent. A service test was made in which the "1-ton" design was fitted to a truck having a "5-ton engine" and a 4-ton body. This was run for 1000 miles in a hilly district. Subsequent examination showed no signs of wear or abrasion.

The alloy was not so readily machined as some of its rivals, but with proper cutting speeds and tool angles there was no real difficulty.

### Accelerated Tire Wear Test

**O**NE of the important problems on which the Bureau of Standards has been working during the past two years has been the development of a test for pneumatic tires which would closely approximate road service and still be of such a nature that it could be carried out in the laboratory in a reasonable length of time. Federal Specification No. 3a, which was adopted during the past month as a basis for Government purchases, includes a laboratory test of this nature which the bureau, in cooperation with the rubber manufacturers, has perfected.

By means of this test it is said to be possible to predict in a very short time the comparative service which may be expected from different kinds of tires. While in service a tire may be in use for from six months to a year or more, the laboratory test does not ordinarily require more than four days of continuous running, and usually any weak point in the tire will show up within two days.

# EDITORIAL

## Will Smaller Cars Come?

THERE appears to be practically no disposition on the part of American motor car purchasers to demand any such diminutive vehicles as are popular in England and France, but there is an undercurrent of feeling in the trade that we shall see more comparatively small cars than now are being built in this country.

By this we mean that there are likely to be fewer extremely large cars purchased in the future rather than that the size of our present comparatively small cars is likely to be decreased.

If this comes to pass it will be due, not as in Europe, to high taxes and high prices for fuel, combined with comparatively small production, but in part, at least, to congestion in cities. Here the car of short wheelbase has a distinct advantage in mobility, while at the same time it has a body of sufficient size for practically all general conditions of service. Such a car is quite satisfactory also for service outside the city and has some advantages in the export market.

A disposition to consider smaller cars more seriously has been brought about in part also by the popularity attained by certain comparatively small models introduced this year. Users have found that these vehicles are comfortable and have just as smart an appearance as larger cars, while acceleration and other performance characteristics leave little to be desired. Furthermore, quality is far from being measured by size, though operating expense decreases as size decreases.

Reduced size should bring with it lower first cost or higher quality for a given cost, so that, where competition is keen, there is an added incentive to decrease size. These are some of the things likely to be considered when deciding upon the character of product to be marketed in 1925 and 1926.

## Equipment Which Gets By

A FAIR proportion of annoying if not serious difficulties which users have with modern cars is due to carelessly installed electrical equipment, much of which is inadequate in size to begin with. That this is true is indicated by tabulations of thousands of first aid calls handled annually by the Chicago Motor Club. These show that 60 to 80 per cent of such calls are attributed to some fault in the electrical system.

Since so much depends in present day cars upon proper functioning of the electric equipment is it worth while to cheapen the cost of these units so far as to make the whole vehicle unreliable?

Opinions may differ as to who is responsible for the present situation. Electrical equipment makers contend that the price limits given them are so low that

it is impossible to use the quality of workmanship and material desired, while the size of the equipment is so small for the service required that trouble virtually is invited. The equipment maker is put in the position of having to build the best unit he can within a very low price limit rather than of seeing how well a unit can be made for a reasonable price.

Batteries in particular have been made so small and so light that their average life is said to be less than 18 months, even with reasonable care. And what is worse, in one sense, the user often finds it virtually impossible to install a larger and more serviceable battery because of lack of sufficient space in the battery box. He must pay three to four times the wholesale price and very likely buy two or more batteries during the life of the car, in the meantime putting up with the serious inconveniences which wornout batteries entail.

All of which should provide food for thought for makers who are seeking the good-will of customers by selling dependable and serviceable products.

## Advertising Cuts Prices

"IT is certain that the public only dimly appreciates that in purchasing motor cars and other commodities it has to pay highly for costly show rooms, expensive catalogs, high postal charges, exhibitions and many other things. Were the proportion that selling costs bear to prices more generally known, some effort to reduce it to reasonable proportions would follow."

Thus says *The Engineer* of England in a recent issue. We rise to remark that the first part of this statement needs amplification because it seems to involve a too popular fallacy about the cost of advertising and sales promotion. In reply to the statement that the consumer has to pay for the cost of advertising, we can justly reply, "Well, he does and he doesn't."

The selling price of a car must include, of course, all production and sales costs plus a margin of profit for the manufacturer. Were advertising and sales efforts discontinued, however, the quantity of individual units sold would decrease materially and the unit price, in consequence, would have to be increased greatly. By and large, advertising and sales effort decrease cost to the consumer rather than increase it.

The problem of lowering marketing costs is not so much one of elimination of activities as of increasing the efficiency of the various methods used. It cannot be denied that marketing costs are far higher today than is desirable and that some means of cutting them down must be found in the near future. But the question should be approached from the standpoint of increasing effectiveness rather than of just reducing effort.

# Our Industry Today—

## *With Attention Now Diverted to 1925 Sales Outlook, Low Stocks and Inventories Lead to a Feeling for an Early Upturn*

NEW YORK, Dec. 1—The attention of the automotive industry is directed more to the outlook for sales of passenger cars and motor trucks after the first of the year than to the prospects for an increase in business during the remaining weeks of the year. The low condition of finished stocks in dealers' hands and the small inventories of parts and materials held by producers lead to an optimistic feeling among all manufacturing branches of the industry for an upturn in production schedules early in 1925.

Passenger car makers may start increasing their orders with parts makers the latter part of the month, instead of waiting for the year to open, though their schedules for early 1925 operations will not be fixed definitely until after show time. There will be some curtailment in car output this month, not only because of the expected lighter retail sales, but because many of the plants will close during the holiday season for plant overhauling and inventory taking during that time.

### Farmers Best Prospects

November demand on the part of consumers is reported as a rule to be along the lines of the previous month, but below the marks set in November of last year. Due to seasonal conditions no stepping up in sales is expected to occur much before the opening of the show season in January. There is no marked movement on the part of wholesalers or retailers to indicate any immediate improvement in demand on the part of the consumer trade.

Manufacturers are not forcing cars on their dealer organizations and dealers are not ordering cars beyond their immediate requirements. As a result of this, demand is likely to reach a fairly high point with the turn of the year and will carry along plant operations to a higher level. The farmer, one of the most important factors relied upon during the last months of the present year to absorb output, is now expected to make his presence felt in the automotive market the early part of next year. He has consumed a number of used cars, but he has not developed to any extent as a new car buyer.

### Parts Makers Optimistic

Optimism prevails, especially among parts makers, who, because of the comparatively light business transacted so far during the quarter, see an early flowing in of orders that will place their plants on capacity programs. The same conservative policy has been pursued in this branch of the industry as has been followed among car makers. Conditions among the parts makers have been excellent, with collections entirely satisfactory.

## Sales Outlook Best in Farming Sections

### General Improvement Not Likely Until 1925—Northwest in “Inquiring” Mood

NEW YORK, Dec. 3—Conditions in the automobile retail selling field continue to vary widely in different sections of the country, with a few territories reporting the volume of business transacted in November better than at any time of the year. Generally speaking, however, sales have shown a decline from the previous month and a greater drop from the marks of the corresponding month a year ago. Few sections hold out prospects for a pick-up in business in December and some see little chance for a return to normal conditions until the spring. This latter outlook, however, is the exception to the general tone of the reports made by correspondents of AUTOMOTIVE INDUSTRIES in leading distributing centers of the country.

From these reports it is evident that farmers are showing increasing interest in motor vehicles, though liquidation of debts may keep them from entering the market to any extent until the spring of next year.

That local conditions enter largely into the sales situation is reflected in the reports. Seattle, for example, while reporting that November sales were slightly less than in the corresponding month of last year, finds that prospects for improvement are exceptionally bright, chiefly for the reason that farming sections have been visited by plentiful rains and snows. The farmers in that section are liquidating their debts of three years' standing and are more in a mood to consider purchasing motor vehicles for their personal use as well as for work on the farms.

Perhaps the most encouraging report of any of those received comes from

Denver. Throughout Colorado, it is stated, the best profits to beet growers in the history of the State have encouraged the farmers to motorize their equipment this winter. All classes of cars continue to show gains, with new records made in sales.

The outlook in Iowa is not so bright. There the decrease in the corn crop has made the prospects for rural sales poor.

“Motor car sales during November,” says the Kansas City report, “have been better than in October but are not yet up to normal. Used car sales have been proportionately ahead of new car sales, especially in the country, where farmers are said to be replacing worn out equipment temporarily but will buy new cars next spring.” Dealers in that section are particularly optimistic over the outlook for 1925.

### Farmers Liquidating Debts

The Northwest, as a whole, is in a far more “inquiring” mood than for some years, although farmers throughout the region are now more actively engaged in liquidating their debts than in buying much motor equipment. Once the debts are liquidated, such profits as are left from the large crops of the season will be spent on cars and trucks. Speaking of the profits from the harvest, a report from Minneapolis says:

“The mental effect of this large increase in crop receipts over recent years is reflected effectively and there is more actual investigation of motor cars by self-invited prospects than for a long time.”

The report continues to say that many firms throughout the Northwest have made greater deliveries by far in November than they did in the same month of 1923. “The tone is good,” it adds, “and the outlook unusually bright.”

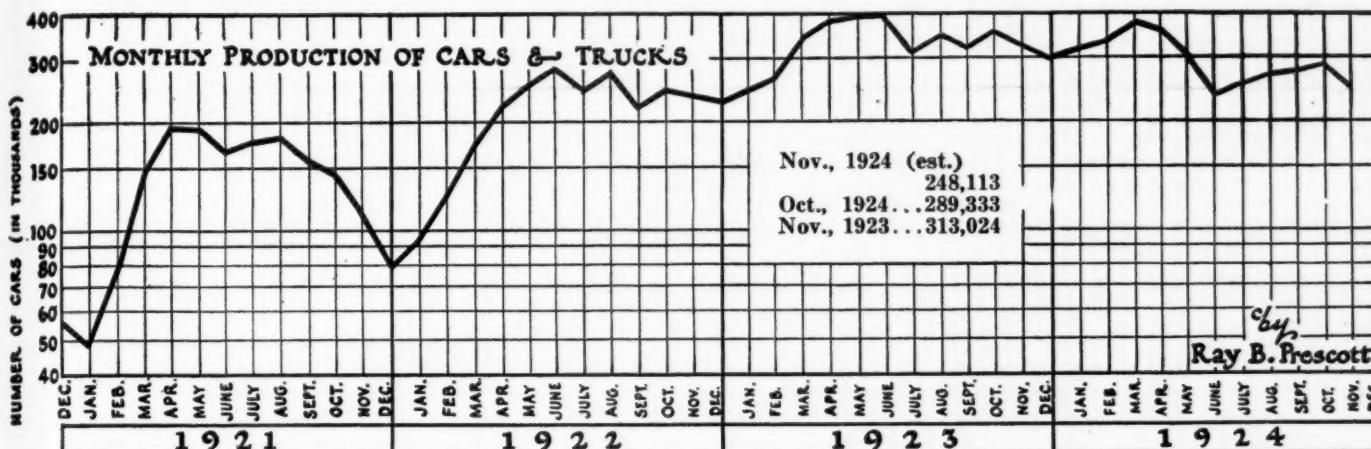
### Gain in Rural Michigan

Throughout rural Michigan there has been a steady gain in sales, industrial centers, however, reporting a dropping off from last year. Sales in December are expected to be affected adversely by the operation of a ruling of the Department of State under which license plates for 1925 will not be issued before Feb. 1. To the Michigan dealer this means that very little new car buying will be done in December because the buyer will not be able to operate until after Jan. 1, unless he pays a half-year's license for the one month. All sales made in December probably will be on a January delivery basis.

Sales in industrial centers generally have dropped behind October figures, as well as those of November of last year. In Chicago, for instance, the decline below October is 10 per cent, while the fall is far greater when comparison is made

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# NOVEMBER OUTPUT IS PLACED AT 248,113



## Total for 11 Months Reaches 3,368,632, Decrease of 341,794

NEW YORK, Dec. 3—Production of passenger cars and motor trucks in November reached 248,113, a drop of 14 per cent from the previous month. This figure was reported to the directors of the National Automobile Chamber of Commerce at their monthly meeting here today, and is based on shipping returns received by the Chamber. The percentage of decline is the same as that shown in the comparison of output in November and October of last year.

Production for the 11 months of this year aggregates 3,368,632, as compared with 3,710,426 in the corresponding period of 1923, a falling off of 341,794. For the full 12 months of last year output amounted to 4,013,660.

In the 11 months of this year passenger car production aggregated 3,037,108, as against 3,361,744 in the corresponding months of 1923.

Truck production in the 11 months of 1924 is placed at 331,524, compared with 348,672 for the corresponding period last year. While passenger car production has shown wide variance throughout the year a greater degree of steadiness has marked truck operations.

December production last year aggregated 303,244, of which 275,472 were passenger cars and 27,772 motor trucks. This figure will not be approached this year, due to the fact that a year ago manufacturers were busy preparing heavy stocks for spring demand, whereas this year there is no disposition on the part of producers to go beyond schedules providing only for immediate demand.

### ANTWERP PLANT NOT CLOSED

DETROIT, Dec. 3—Reports from Antwerp that the Ford Motor Co. had closed its plant there, because of the new Belgium tariff, which, it was said, makes import duties prohibitive, are denied at

### November Car and Truck Production Estimated at 248,113, a Decline of 14 Per Cent, Compared with October

NEW YORK, Dec. 3—November production, based on shipping returns received by the directors of the National Automobile Chamber of Commerce, amounted to 248,113 cars and trucks, a drop of 14 per cent from the previous month.

The following table gives the statistics for the first 11 months of 1924 and 1923:

	Output		Carloads		Driveaways		Boat	
	1924	1923	1924	1923	1924	1923	1924	1923
January	316,282	243,561	46,474	35,423	41,489	39,072	1,024	728
February	367,532	276,960	52,224	36,137	42,594	43,620	427	882
March	382,494	355,097	54,545	44,995	41,555	63,017	495	1,888
April	373,214	382,763	48,030	46,102	37,741	60,483	4,156	5,028
May	312,666	394,217	35,510	45,402	32,756	62,357	8,338	12,818
June	245,829	378,618	26,046	40,291	25,205	59,110	7,321	13,494
July	262,919	328,121	27,166	32,837	26,190	46,946	7,297	10,135
August	279,074	345,315	30,200	38,371	28,240	45,936	7,538	10,055
September	290,976	327,556	32,754	36,030	28,124	39,689	7,150	8,466
October	289,333	365,194	32,500	42,309	28,450	37,970	5,750	7,673
November	*248,113	313,024	....	38,133	....	32,959	....	6,413
Total	3,368,632	3,710,426						

Factory shipments and output for December of 1923 and 1922 follow:

	Output		Carloads		Driveaways		Boat	
	1923	1922	1923	1922	1923	1922	1923	1922
December	303,244	228,410	34,984	27,244	27,608	26,743	4,000	1,307

Motor vehicle production segregated as to cars and trucks is as follows:

	1924		1923		
	Cars	Trucks	Cars	Trucks	
January	287,353	28,929	January	223,822	19,739
February	336,371	31,161	February	254,782	22,178
March	348,356	34,138	March	319,789	35,298
April	337,045	36,169	April	344,661	38,102
May	279,445	33,421	May	350,460	43,757
June	217,935	27,894	June	337,442	41,176
July	237,668	25,251	July	297,413	30,708
August	251,551	27,523	August	314,431	30,884
September	260,171	30,805	September	298,964	28,592
October	257,900	31,433	October	335,041	30,153
*November	223,313	24,800	November	284,939	28,085
Total	3,037,108	331,524	Total	3,637,216	376,444

\*Estimated.

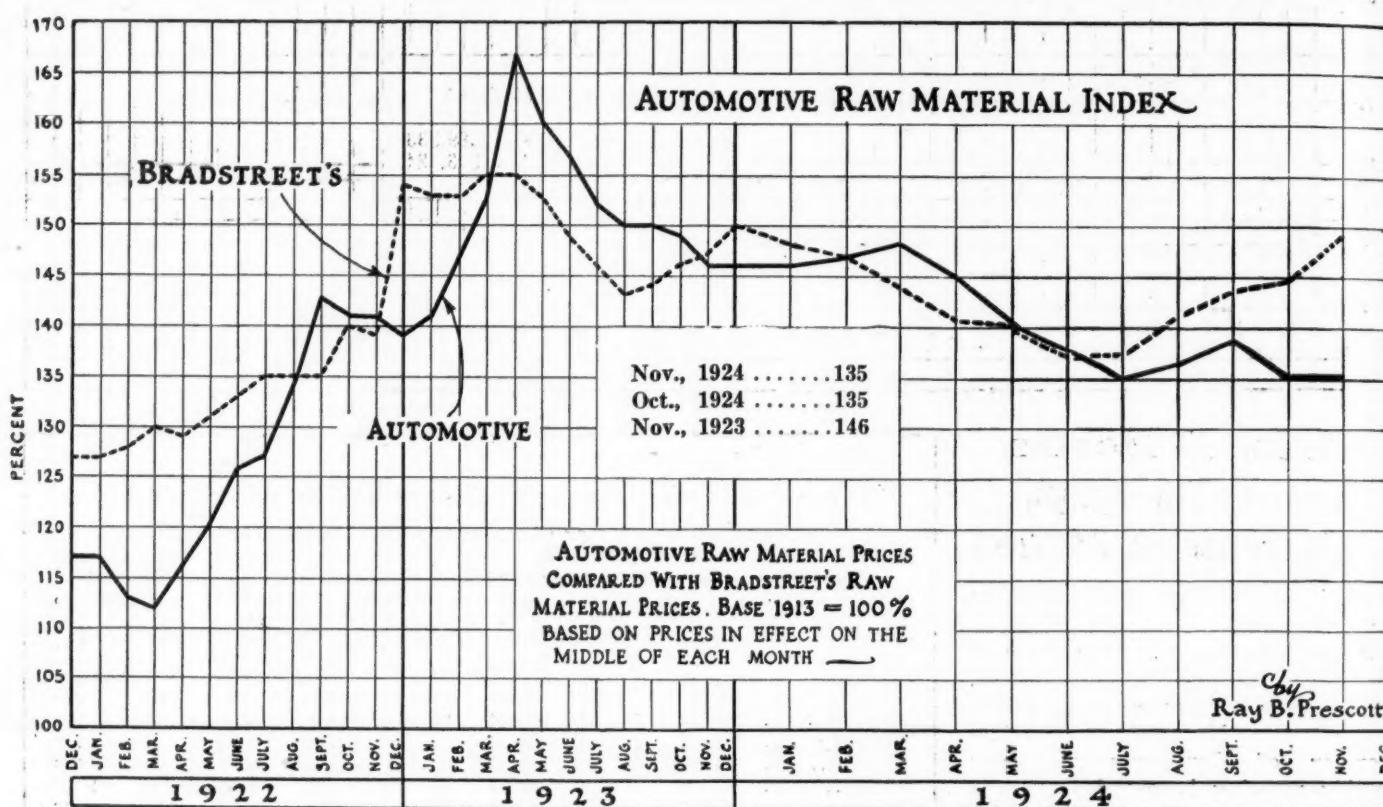
Ford offices in this city. It is stated that the company plans no action toward discontinuing or interrupting its Antwerp operations.

### DITWILER CHANGES

GALION, OHIO, Dec. 3—The Ditwiler Manufacturing Co., long associated with

the production of steering gears for automobiles and trucks, has discontinued its steering gear department. All gear contracts will be completed by the end of the year, after which time the company will concentrate on the manufacture of hand-operated and automatic steel dump bodies.

## COSTS OF RAW MATERIALS UNCHANGED



### Sales Outlook Best in Farming Sections

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with November a year ago. Low priced cars bore the brunt of the decline. It is apparent in this district that the downward movement in automotive business has lost considerable of its momentum. At the same time no great improvement is expected until next year. Practically the same condition prevails in other industrial centers, such as New York and Indianapolis. In the latter city some dealers see no great improvement in sight until spring.

General conditions are excellent in the Milwaukee territory with sales best in the medium-priced field. Higher-priced cars are suffering, especially in regard to retail demand, prospects who ordinarily would purchase them now turning to the medium priced market. The principal factor retarding sales of lower priced models is the unemployment situation, which is reported to be worse than last year. Recent price cuts have added to the sales resistance. In the Milwaukee field the prospects for improvement in December are bright.

Dealers in Louisville, Ky., are entering upon an extensive advertising campaign to stimulate December business. November sales showed the seasonal decline, although business was on a par with that of November of last year. Few surplus stocks on hand are reported.

In Toledo November was not as good as October or November of last year. "And not much business is looked for in December," the report says. "It is not expected that buying will increase to any extent until after Jan. 1, and then possibly not in normal volume until about March. Some of the new closed models have created attention and some individual dealers have reported good to fair business, but the general run has been a disappointment after a fairly good October." As for the prospects in the outlying farm territory, not much can be expected until the spring, the farmer, as elsewhere, being busy liquidating his debts.

#### St. Louis Business Brisk

Both Cleveland and Cincinnati report sales comparing well with those negotiated in the previous month and in November of last year.

A good outlook for December business is presented in the report from St. Louis, where sales are reported to be "brisk," although not equal to those of the previous month.

Christmas trade in California cities is not particularly bright, due to the delay in crop maturity and the failure of the expected effect of the national election to reach the Coast. In San Francisco sales in November decreased 15 to 18 per cent under November of last year and were barely equal to those of this October. November sales in Los Angeles were approximately the same as in October, which were almost 40 per

cent less than the same month last year.

"The upward tendency in buying," says the report from Boston, "has got a start and it is expected to keep on climbing through the intensive efforts of sales organizations." Conditions generally in the Boston area show a marked improvement in tone over previous months.

Used cars on the average are selling well. Boston reports:

So many new cars of the 1924 series were available at reduced prices when the 1925 models were announced that it slowed up the used car sales. The lowered prices of new models coming through for the 1925 series also meant dropping the value of used cars. This handicaps new car sales, for buyers decided to keep their old cars when the trade-in was so low. With the new car sales growing it is bound to have its effect later on used car sales.

In San Francisco used car sales have reached their lowest level of the year.

Long term paper accepted for new cars ranging from 18 to 24 months has filled the used car market with obsolete models. This has affected new car sales. New car dealers are trying to offset this by offering commission to salesmen who make sales on short term paper."

#### DETROIT EMPLOYMENT 196,557

DETROIT, Dec. 3—An increase of 1454 is noted in industrial employment here last week. This compares with an increase of 1078 in the previous week. Total employment at the present time is 196,557, as against 212,397 a year ago.

Automotive Industries  
December 4, 1924

## Bank Seeks Receiver for Earl Motors Co.

Petition Asserts That Company  
Has \$5,685,975 Liabilities with  
\$991,679 in Assets

DETROIT, Dec. 3.—Under the terms of an order signed in the Circuit Court Earl Motors Co. of Jackson is called upon to show cause why a receiver should not be appointed. The action was started by the Jackson City Bank, which petitions for a marshalling and distribution of the assets of the Earl company among its creditors.

The papers as filed show the Earl company to be indebted to the Jackson City Bank in the sum of \$49,641, with interest. It is asserted this sum was loaned the Earl company on promissory notes. It is further set forth that the Earl company is indebted to various individuals and corporations in the sum of \$5,685,975. Assets of the concern, consisting of real estate, buildings, fixtures, machinery, tools and equipment, are believed to total \$991,679, according to the petition. In addition the company is credited with having accounts and bills receivable totaling \$143,722.

### Reorganization Committee

The bank sets forth that Jan. 20, 1922, the Earl Motors Co. formed a reorganization committee composed of Ralph Van Vechten, Percy H. Johnson, R. T. Forbes, William Sparks, Frank H. Joyce, Clarence B. Hayes and V. C. Jackson. This committee was to effect a reorganization and recapitalization of the company and was to make an adjustment of debts. As a means of a liquidation of debts the company authorized the issue of five-year debentures under a trust agreement with the company in the sum of \$2,775,000, it is declared. The debentures were payable Feb. 1, 1927.

The petitioner has invited other interested financial concerns to join in the suit. Among these are three other Jackson banks with claims of approximately \$68,227, and the Continental and Commercial Trust & Savings Bank of Chicago with a claim of approximately \$465,384.

The Hayes Wheel Co. is also asked to join in the suit.

### Service Equipment Associates Disbands

CHICAGO, Dec. 3.—With the appointment of a service equipment committee under the merchandising committee of the Automotive Equipment Association at the recent convention in this city, the Service Equipment Associates, which was formed more than two years ago to promote the use of shop equipment, was disbanded.

In explaining the action of the S. E. A., G. W. Brogan, secretary and a prime mover in the association, said:

The members of the Service Equipment Associates are particularly loyal to the Automotive Equipment Association, which has done so much for all of us, and, although the S. E. A. was organized with the approval of Commissioner Webster and has been conducted in accordance with his advice, to clear the atmosphere of any feeling or doubt in the minds of others we have decided that it is to the interest of all concerned and a step in the advancement of the parent association to disband.

The S. E. A. had its beginning in May, 1922, when a group of manufacturers agreed upon a plan of pooled advertising of the promotional and educational kind.

The permanent organization was effected during the A. E. A. convention in Chicago, November, 1922.

### India Tire Expands to 1400 Daily Capacity

AKRON, Dec. 3.—The India Tire & Rubber Co. will increase its production of automobile tires to 1400 a day when a three-story addition to the plant here is completed about Jan. 1, according to President J. M. Alderfer. It will be 96 x 60 ft.

Present production is 1100 tires a day, as compared with a daily production at the same time last year of 650 tires.

Earnings of the company are considerably in excess of 1923, according to officials.

India paid 75 cents extra to common stockholders last quarter, in addition to the regular dividend of \$1.

### Quebec Raises Maximum Weight for Motor Buses

MONTREAL, QUE., Dec. 3.—The maximum authorized weight of automobile buses, commercial vehicles and delivery cars permitted in Quebec province has been raised by order in council passed by the provincial government to 9000 lb. per driving axle in the case of pneumatic tires and 8000 lb. with solid tires.

This follows on a report by the chief engineer of the Roads Department that vehicles with two driving axles, which implies four driving wheels, can carry a heavier load without damaging the roads than can vehicles with only one driving axle.

### Durant Lansing Plant Resumes Operations

LANSING, Dec. 3.—Operations have been resumed at the Lansing plant of Durant Motors, Inc., after a two weeks' shutdown for inventory taking. The plant is now operating on a 55-hour-a-week basis, with the same number of employees as during the last two months.

Schedules for December and January call for 2800 cars each month. On account of the holidays, operations in December will cover a period of approximately 20 days.

The company reports no cars in storage and that its production is based directly on retail demand.

## Stewart-Warner Adds to Lines by Merger

Casters and Furniture Hardware  
to Be Made in Volume—Bassick-Alemite Profits

CHICAGO, Dec. 3.—Stockholders of the Bassick-Alemite Corp. are given until Dec. 10, 1924, to exchange their shares for Stewart-Warner Speedometer Corp. stock on the basis of 10 shares of the former for seven of the latter, according to a statement by C. B. Smith, president of the Stewart-Warner organization. This is the same basis of exchange as provided in the contract by which Stewart-Warner takes over the majority stock of the Bassick-Alemite corporation.

Mr. Smith says:

The acquisition of the Bassick-Alemite Corp. will very materially strengthen the Stewart-Warner Speedometer Corp. by adding to its line not only the Alemite lubricating system and other automobile accessories in which the Stewart-Warner Corp. is a leader, but adding to its lines casters and furniture hardware in large volume, thus giving it other lines of importance outside of those used on automobiles.

The profits of the Bassick-Alemite Corp. for 1923, after taxes and depreciation, were \$1,401,465.60, or approximately \$7 a share on the 200,000 shares outstanding. The profits for the nine months to Sept. 30, 1924, after taxes and depreciation, were \$1,139,220.44. Earnings of both companies should be materially increased through this amalgamation, wider sales distribution, savings in overhead and a large saving on the larger volume of purchases.

Mr. Smith's statement indicates that the corporation has a big program in view, looking to the development of the industrial lubrication end of the business. In addition to supplying the field already developed, a system is being worked out for the lubrication of railroad locomotives and cars. Possibilities in that field are considered very inviting.

It is said there are 5,000,000 Alemite systems in use on automobiles at present and that there are 20,000 service stations.

### 3 Companies Form Merger in Canada

TORONTO, Dec. 3.—Stockholders of Carriage Factories, Ltd., have ratified the agreement between that company, Brantford Carriage Co. and P. T. Legare & Co., Ltd., by which these concerns will be merged into a new company under the name of Canada Carriage & Truck Co., Ltd.

According to J. B. Tudhope, president of Carriage Factories, production of vehicles and sleighs by the company during the last five years has declined 85 to 95 per cent, as compared with the previous period, and concentration of operation is essential.

## Competition Grows on Closed Models

### Ford and Dodge Price Cuts Reflect Sales Possibilities for Low Priced Cars

DETROIT, Dec. 3.—Reductions made by the Ford Motor Co. and Dodge Brothers this week reflect very strongly the sales possibilities for low-priced closed cars. In Ford reductions the important cut is on the Fordor sedan and on the Dodge Brothers models. The outstanding reductions are on the two sedan models, with a less pronounced reduction on the business coupe. It is notable that in both cases the open car reductions are practically negligible.

Manufacturers who already have low-priced closed models have been getting plenty of business at the established prices. It is largely to meet the competition arising from these models that other manufacturers have made reductions in their higher priced closed cars.

#### Coach Sales Increase

The introduction of coach models by several of the General Motors companies has been followed by the development of large business in these particular models. To a considerable extent these models have been selling to the exclusion of the regular closed jobs, this being found particularly true by some divisions. Open car owners are being found to show a particular desire for the new coach models. Although much of the business involves trading, the coach demand is so strong that the terms of trade are advantageous to the dealer.

The Hudson-Essex reductions of a week ago are generally taken as a movement to emphasize the particular advantages of the coach. The company has just closed the largest fiscal year that it has ever known, sales running approximately 40,000 in excess of its past banner year. Practically 80 per cent or better of this total business has been in coach models, and the company is aiming to bring this percentage even higher, as it is completely sold on the possibilities of the low-priced closed car market.

#### Decreases Result of Economy

General opinion among dealers in this territory is that open cars will be sold only to the occasional buyer and that depreciation on them will be extremely rapid so far as resale value is concerned. This opinion is shared to a large extent among manufacturers, although the demand from the export field will compel their manufacture in still considerable numbers.

All of the reductions of these three manufacturers have been offered with

little comment. The Ford company states that manufacturing economies by the opening up of new resources under company control with improvements in production methods has aided in making the reductions possible.

In view of the general market situation, it is possible that reductions will be made on closed models by other manufacturers, at least as a temporary measure, until they are able to get into production on some low-priced bodied cars.

In this connection, however, it is confidently expected that practically all manufacturers will have cars of this type ready for the market within a short time.

### Ford Cars Cut \$5 to \$25 and Truck Chassis \$5

DETROIT, Dec. 3—Price reductions ranging from \$5 to \$25 on the passenger cars and of \$5 on the 1-ton truck chassis have been announced by the Ford Motor Co. Prices on all open models, as well as the coupe, are cut \$5, and the Tudor and Fordor sedans reduced \$10 and \$25 respectively.

Numerous manufacturing economies made possible through the opening of new resources under Ford control are responsible for the new prices, the announcement says.

The old and new prices are as follows:

	Old Price	New Price
Without Starter and Dem. Rims		
Runabout .....	\$265	\$260
Touring .....	295	290
With Starter and Dem. Rims		
Runabout .....	\$350	\$345
Touring .....	380	375
Coupe .....	525	520
Sedan Tudor .....	590	580
Sedan Fordor .....	685	660

All persons who are enrolled under the Ford weekly purchase plan and those who have not yet taken delivery of their cars will benefit automatically by the new reductions.

### Durant Makes Reductions Ranging from \$60 to \$175

LANSING, MICH., Dec. 3—Durant Motors, Inc., has announced price reductions ranging from \$60 to \$175 on all standard models of the Durant Four cars.

Prices of special models in colors, with balloon tires, four-wheel brakes, etc., have been correspondingly reduced and will be supplied to dealers upon request.

The following tables show the old and new schedule:

	Old Price	New Price
5-passenger touring phaeton.....	\$ 890	\$ 830
2-passenger business coupe.....	1,035	935
5-passenger coach.....	1,185	1,050
4-passenger coupe.....	1,340	1,160
5-passenger sedan.....	1,365	1,190

### HODGMAN RECEIVERSHIP

NEW YORK, Dec. 3—James Newton Gunn and Gordon Auchincloss, receivers for the Hodgman Rubber Co., have set Feb. 1, 1925, as the time limit for filing claims against the company.

## Bill Seeks Repeal of Equipment Tax

### Fight Resumed in Washington Against Automotive Excise Levies

WASHINGTON, Dec. 3—The fight for repeal of excise taxes on automobiles, trucks and accessories has been resumed. The "first gun" fired was a request for the repeal of all excise taxes on automotive equipment.

This is called for under a bill introduced by Grant M. Hudson, representative from East Lansing, Mich., and provides for the repeal of sub-sections 1, 2 and 3 of Section 600 of the Revenue Act of 1924. These are the three sections covering automotive equipment. The measure was referred to the Ways and Means Committee for consideration.

There is little possibility that the bill will receive any consideration at the hands of the present Congress, inasmuch as that body, meeting in its second session, is the same one that voted approximately \$25,000,000 relief to the automobile industry in the first session, when the excise tax of 5 per cent on tires, parts and accessories was cut to 2½ and the 3 per cent tax on trucks costing less than \$1,000 was eliminated.

### Chevrolet Plant to Go Into Full Production

DETROIT, Dec. 3—Chevrolet Motor Co. will go into full production during this month, according to a statement by Charles F. Barth, vice-president and general manager. This means that between 4000 and 5000 men in Flint and the other manufacturing cities of the company will be added to the payrolls by Jan. 1.

A conference of branch factory managers was held at Flint.

### Dodge Reduces Prices; Makes Balloon Standard

DETROIT, Dec. 4—Announcement has been made by Dodge Brothers of price reductions ranging from \$10 on all open models, \$40 on the business coupes and from \$140 to \$155 on the sedans.

Balloon tires, which were formerly fitted only on the "special" models, are now standard equipment on all cars. The present line of "special" models is supplied with five balloon tires, as compared with four on the regular lines. The old and new prices are shown below:

	Old Price	New Price
Roadster .....	\$865	\$855
Roadster (Spec.) .....	965	955
Phaeton .....	895	885
Phaeton (Spec.) .....	995	985
Business Coupe .....	1,035	995
Business Coupe (Spec.) .....	1,135	1,095
Sedan B .....	1,250	1,095
Sedan B (Spec.) .....	1,350	1,195
Sedan A .....	1,385	1,245
Sedan A (Spec.) .....	1,485	1,330

## Men of the Industry and What They Are Doing

### Owen Returns from Europe

Percy Owen, chief of the Automotive Division of the Department of Commerce, returned home this week on the Leviathan after a two months' trip to Europe. Mr. Owen attended the London and Paris shows, visited automobile plants in Turin and Milan, Italy, and thence passed into Austria and Czechoslovakia. He spent several days in Berlin and later paid a visit to factories at Mannheim and Stuttgart. Passing through Holland, he went to Copenhagen, visiting the General Motors plant in that city. Mr. Owen expressed himself as very much impressed with the growth in Europe of the small car, not only as a factor in the home markets, but as a possible competitor against American cars in foreign markets.

### Ward Resigns as Acme Sales Head

C. A. Ward, Jr., has resigned as sales manager of the Acme Motor Truck Co., Cadillac, Mich., on account of his health.

Mr. Ward was sales manager of the company for the last year and has been in its employ for nine years. He was successively New York branch manager and Cleveland branch manager. He left the latter position to become sales manager of the company. He had been assistant sales manager prior to his assumption of the branch management.

### Locher Packard Factory Manager

J. E. Locher, manager of the carriage division of Packard Motor Car Co., has been promoted to the position of general factory manager; R. N. Brown, formerly assistant to the factory manager, has been made general superintendent; H. A. Garvey has been named carriage division manager, and Oscar Finding superintendent of the carriage division. The changes are made effective by E. F. Roberts, vice-president in charge of manufacturing.

### Gould Made Gray Sales Director

Charles Gould has been appointed director of sales, service and advertising for Gray Motor Corp., succeeding L. R. Martell, resigned. The new sales director came to Detroit about 12 years ago to take charge of the service department of Maxwell, and during his régime inaugurated the first country-wide manufacturers' service organization. He was later given the task of directing the sales policy of that company and acted in this capacity until 1917, when he entered Government service.

### Smith and Hyde District Managers

Charles T. Smith and Mark P. Hyde have been appointed district managers for the Oakland Motor Car Co. in the Charlotte, N. C., and New England dis-

### C. S. MOTT MENTIONED AS CABINET MEMBER

WASHINGTON, Dec. 3—Charles S. Mott, vice-president of the General Motors Corp., is mentioned as a possible member of President Coolidge's cabinet after March 4. Mr. Mott's name has been put forward by his friends without any solicitation on his part. Since Secretary Denby's retirement, Michigan has had no representation in the cabinet and it is felt that the State's industrial prestige should be recognized with a cabinet appointment.

tricts. Mr. Smith has been a Dodge dealer in Owensboro, Ky., for a number of years. For ten years previously he was associated with the Ames Motor Car Co. as engineer and works manager. Mr. Hyde was Far Eastern representative of a large American trading company for a number of years.

### Higginbottom Goes with Oakland

Hugh Higginbottom, for 14 years connected with the sales organization of Dodge Brothers, has been appointed district manager for the Oakland Motor Car Co. in the Seattle territory. During the last year and a half Mr. Higginbottom has been assistant to sales executives at the Dodge Brothers plant in Detroit. He organized the traffic department for that company in 1915.

### Lawrence Has New Connection

J. R. Lawrence, for seven years connected with the Motch & Merryweather Machinery Co. of Cleveland, has joined the sales department of the Marshall & Huschart Machinery Co. of Chicago.

### Year's Automotive Taxes Shows 7 Per Cent Gain

WASHINGTON, Dec. 4—A total of \$2,796,179 in internal revenue taxes was collected during the year ended June 30, 1924, according to the annual report of the commissioner of internal revenue filed this week with Congress. This sum represents an increase of \$174,434,029, or 7 per cent, over the tax collection for the fiscal year ended June 30, 1923.

Comparative figures on taxes collected from various automotive sources show the following: On passenger cars, for 1924, \$112,870,536; for 1923, \$92,736,580; on trucks and automobile wagons, for 1924, \$11,510,563; for 1923, \$20,139,956; on tires, parts and accessories, for 1924, \$33,633,609; for 1923, \$40,875,148.

## Ford Achievements Recognized by Senate

### Upper House Decides to Record Them and to Consider Muscle Shoals Bid

WASHINGTON, Dec. 3—The record of the Ford Motor Co. from 1908-23 became a part of the United States Senate official record this week when that body set aside a special day for consideration of the Ford offer of \$5,000,000 for the purchase of Muscle Shoals.

The record of achievement was inserted in the Congressional Record as evidence of the belief that Henry Ford holds the solution of what to do with the property, and that his past record is indicative of what he might be able to do with the project.

The statistics, which were furnished Senator Edwin F. Ladd of North Dakota, by the Ford Motor Co., are as follows:

SIXTEEN-YEAR RECORD OF THE FORD MOTOR CO., 1908-1923

Year	Amount	Price of Model "T" Touring Car		Average Daily Wage Paid
		Per Cent Reduction From 1908	Per Cent Increase Over 1908	
1908.....	\$950	..	\$2.25	
1909.....	780	18	2.14	*5
1910.....	690	27	2.40	7
1911.....	600	37	2.28	1
1912.....	550	42	2.25	0
1913.....	490	48	2.43	8
1914.....	440	54	4.41	96
1915.....	360	62	4.40	95
1916.....	360	62	4.41	96
1917.....	450	53	4.95	117
1918.....	525	45	5.31	136
1919.....	575	39	6.11	171
1920.....	440	54	6.72	198
1921.....	415	56	6.91	207
1922.....	348	63	6.65	195
1923.....	295	69	6.62	194

\*Decrease.

### Ellis Promoted by Cadillac

Forrest T. Ellis, superintendent of tools and equipment of the Cadillac Motor Car Co., has been promoted to the post of superintendent of manufacturing. He has been identified with the Cadillac company since 1910 and in his new work will have charge of all machinery and assembly departments.

Mr. Ellis is succeeded in his former position by Victor A. Olsen, who was assistant in the same department. Mr. Olsen has been associated with Cadillac for five years.

### Zimmermann Awarded Medal

William F. Zimmermann, chief engineer of Gould & Eberhardt, Newark, N. J., has been awarded the Longstreth medal by the Franklin Institute of Philadelphia in recognition of his invention of the worm generating hob.

## October Equipment Exports \$18,775,127

**Gain of \$2,500,000 Shown Over September and \$15,443,098 for Ten Months**

WASHINGTON, Dec. 3—Exports of automotive equipment during October totaled \$18,775,127, an increase of \$2,500,000 over September, according to the Bureau of Foreign and Domestic Commerce. The total exports for the first ten months of this year aggregate \$185,443,098, compared with \$170,000,000 for the entire year of 1923, the figures show.

Expressed in terms of motor vehicle units, the October exports were 21,611 vehicles, out of a production for the month of 393,149, or 5.5 per cent of the total, compared with 16,891 in Sep-

tember, out of a production of 288,008 cars and trucks.

Production figures for Canada and the United States combined show that during the first nine months of this year a total of 2,890,534 cars and trucks were manufactured, of which number 176,386 were exported. The ratio of exports to production for the nine months' period is 6.1 per cent.

October exports from the United States totaled 17,097 cars and trucks, of which 14,373 were passenger cars and 2724 trucks, while the Canadian exports total 4514 cars and trucks, 3481 being passenger cars and 1033 trucks, the total being 21,611, of which 17,854 were passenger cars and 3757 trucks.

Australia maintained its leadership as the leading market for passenger cars exported during October, taking 3638, valued at \$2,275,751. Other leading markets, in the order named, were: Argentina, 1572, valued at \$1,178,411; Mexico, 1060, valued at \$608,990; Canada,

858, valued at \$851,336; Cuba, 815, valued at \$475,668, and British South Africa, 704, valued at \$594,323.

The leading truck export markets were: Brazil, 813, valued at \$209,600; Italy, 369, valued at \$93,923; Australia, 157; Cuba, 137; Chile, 134, and Uruguay, 129.

Comparing October exports of this year with the same month of last year the figures show that the October, 1923, total was 10,456 cars, against the 14,373 this year, and the truck exports were 2319 in October, 1923, compared with 2724 this year.

### McLEAN TIRE ASSETS SOLD

EAST LIVERPOOL, OHIO, Dec. 3—J. Sandels Morrow, as trustee for the property committee of the bondholders of the McLean Tire & Rubber Co. of this city, has purchased the assets of the company at sheriff's sale for \$47,000.

### Exports, Imports and Reimports of the Automotive Industry for October of Current Year and Total for Ten Months Ending October 31, 1924.

	EXPORTS				Ten Months Ending October 31			
	Month of October		1924		1923		1924	
	No.	Value	No.	Value	No.	Value	No.	Value
Automobiles including chassis.....	12,788	\$9,522,963	17,115	\$12,424,091	126,132	\$86,512,079	152,327	\$110,155,819
Electric trucks and passenger cars.....	13	18,712	.....	.....	166	248,955	.....	.....
Motor buses and trucks, except electric:								
Up to 1 ton.....	1,963	781,047	1,703	602,029	15,731	5,747,643	11,166	4,729,743
Over 1 and up to 2½ tons.....	250	339,303	419	597,825	3,429	4,095,144	4,465	6,052,120
Over 2½ tons.....	106	299,069	74	206,638	715	1,752,478	1,281	3,109,440
Total motor trucks and buses except electric	2,319	1,419,419	2,724	1,555,425	19,875	11,595,265	23,706	16,394,361
<b>PASSENGER CARS</b>								
Passenger cars, except electric:								
Value up to \$500 inclusive.....	3,390	1,202,476	5,948	2,166,023	45,017	15,940,424	51,313	18,664,507
Value up to \$800.....	3,005	1,960,071	3,919	2,793,303	24,601	16,276,666	36,510	24,823,945
Value over \$800 and up to \$2,000.....	3,807	4,207,302	4,161	4,919,644	34,174	36,108,890	37,727	41,896,051
Value over \$2,000.....	254	714,983	345	965,272	2,299	6,341,879	2,934	8,206,347
Total passenger cars except electric.....	10,456	8,084,832	14,373	10,844,242	106,091	74,667,859	128,424	93,590,850
<b>PARTS, ETC.</b>								
Parts, except engines and tires*.....	505,475	89,557	524,462	141,248	23,403,056	3,716,896	10,189,090	2,281,109
Automobile unit assemblies*.....	20,082,657	4,827,896	.....	.....	197,283,696	45,529,139	.....	.....
Accessories and parts*.....								
Automobile service appliances (not elsewhere specified)*.....	397,278	215,829	806,802	341,431	1,580,076	840,115	5,782,986	2,326,337
Station and warehouse motor trucks.....	44	21,626	9	2,192	196	95,868	126	77,100
Trailers.....	29	7,286	63	26,359	931	319,886	472	172,520
Airplanes.....	2	5,000	5	59,000	44	305,151	52	357,677
Parts of airplanes, except engines*.....	29,080	11,849	6,372	5,516	260,360	49,052	162,269	162,040
<b>BICYCLES, ETC.</b>								
Bicycles and tricycles.....								
Motorcycles.....								
Parts, except tires.....								
<b>INTERNAL COMBUSTION ENGINES</b>								
Stationary and Portable:								
Diesel and Semi-Diesel.....	12	27,320	228	29,958	880	379,871	1,571	460,456
Other stationary and portable:								
Not over 8 H.P.....	2,004	166,377	2,948	253,400	23,808	2,229,587	20,966	1,911,542
Over 8 H.P.....	107	107,485	106	131,244	1,939	1,080,639	2,015	1,392,279
Automobile engines.....								
Motor trucks and buses.....	9	2,561	40	10,859	2,956	338,187	1,045	149,712
Passenger cars.....	3,247	528,972	920	167,359	34,573	4,437,969	16,796	2,694,695
Tractors.....	301	107,036	24	14,909	2,365	570,396	2,366	731,873
Aircraft.....	5	7,860	11	14,800	42	41,617	144	217,999
Accessories*.....	594,442	288,567	787,963	289,463	6,605,600	2,893,650	7,069,223	3,050,021
<b>IMPORTS</b>								
Automobiles and chassis (dutiable).....	228	138,542	57	56,967	742	761,252	504	706,036
Other vehicles and parts for them (dutiable)	...	178,519	..	84,516	...	1,678,791	...	899,970
<b>REIMPORTS</b>								
Automobiles (free from duty).....	53	134,801	91	180,887	2,186	2,541,719	465	686,039

\* Pounds.

## Toledo Plants Near Normal Production

### Bock Bearing Co. Secures Big Studebaker Contract—A Busy Winter Predicted

TOLEDO, Dec. 3—Automotive plants in Toledo are rapidly getting back on a production schedule approaching normal. Announcement has been made by the Bock Bearing Co. that it has secured a contract to supply the entire requirements of the Studebaker Corp. at South Bend, and that will mean capacity production in the plant here with a roll of about 600 men. A night shift may be put on soon. Other manufacturers are increasing orders.

The Chevrolet Motors Ohio Co. here is going on full time basis and calling back more than 1500 employees.

Willys-Overland Co. plant now has more than 6000 men at work, which establishes a peak since the summer decline.

The Electric Auto Lite Co. is also adding to its force and booking considerable new business. This company will retire the balance of its outstanding first mortgage bonds amounting to about \$1,000,000 on Dec. 31. The bonds are called by the bankers at 105. The entire issue of \$3,000,000 floated on July 1, 1922, has been retired out of earnings.

"We look for the busiest winter ever known in our plant," declared R. E. Clingan, manager of the Bock Bearing Co. This sentiment will not be general, but most plants will be on greatly improved schedules.

Employment figures show a gain of more than 1000 workers in November in Toledo plants.

### Gasoline Prices Raised 1 Cent in Two States

NEW YORK, Dec. 3—Advances of one cent a gallon in the price of gasoline in Pennsylvania and Delaware, effective Dec. 2, announced by the Atlantic Refining Co. and the Gulf Refining Co., were said by men in oil trade circles to be probable forerunners of further increases in refined crude oil, especially gasoline and kerosene.

The Gulf Refining Co. announced an additional advance of two cents a gallon in North and South Carolina, making the tank wagon price 15 cents a gallon in North Carolina and 15½ cents in South Carolina. The increases meet the advances announced by the Standard Oil Co. of New Jersey a short time ago.

The expectation of further increases is based on the unusually favorable weather this fall and larger inquiries for export gasoline.

### NOVEL LONGREN BIPLANE

DAYTON, Dec. 3—Undergoing military tests at McCook Field is a small bi-

plane built by the Longren Aircraft Corp., Topeka, Kans, a novel feature of which lies in the construction of the fuselage, built of compressed paper. The wings are so hinged that they can be neatly folded alongside of the fuselage.

It is said that as soon as military trials prove satisfactory, a number of these ships will be built for service and commercial use.

### \$1,215 Oakland Coach Added to G. M. Divisions

DETROIT, Dec. 3—The addition of a coach model to the Oakland line priced at \$1,215 makes four General Motors divisions which now have coach models on general sale at prices ranging from the Chevrolet at \$695 to the Buick Master X at \$1,495. Other intermediate priced models are the Oldsmobile at \$1,065 and the Buick Standard model at \$1,295.

The Oakland coach, like its predecessors in the other divisions, is designed and built by Fisher. It has a full five-passenger body. The body frame is of selected hardwood, and all panels are of steel body. The hood and disk wheels are finished in sagebrush green with orange striping. The fenders, running gear and upper structure are black. The interior is lined with dark green upholstery of high grade worsted.

The body finish is Duco. The doors are 34 in. wide. Front seats are of Pullman type, heavily upholstered and folding forward. Like the other coach bodies by Fisher, it has the Fisher VV windshield.

Included among the equipment items are windshield wiper, rear view mirror and crank type quick-action window lifts.

### Says Stevenson Plan May Become Harmful

NEW YORK, Dec. 3—"The Stevenson plan has outlived whatever usefulness it once had and it should now be done away with," Sir George Beharrel, managing director of the Dunlop Rubber Co., said on the eve of sailing home after a visit to the company's American plant in Buffalo. "If it continues in operation," he added, "it may prove harmful to the rubber industry."

Speaking of conditions at the Buffalo plant, Sir George said:

Our plant in Buffalo is operating at about 25 per cent capacity and the outlook for next year with us is very bright. Sales for spring delivery, 1925, are running far ahead of present production and it will be necessary to increase capacity to meet sales volume. The factory is experiencing a shortage of tires at the present time. A good portion of our volume is balloon tires.

He predicted that the company's earnings for the year would be more than 15 per cent ahead of last year.

### SPIJKER PLANT CLOSED

WASHINGTON, Dec. 3—The Spijker Automobile Co. of Hague, Netherlands, closed on Nov. 14, because of slow business, according to cable received by the Department of Commerce.

## Star Engine Changes Give Greater Power

### Better Acceleration and Smoother Running Provided by the New Design

NEW YORK, Dec. 3—Several changes have been made in the design of the engine of the Star car, practically all of them tending toward more power and better acceleration. The bore has been increased from 3½ in. to 3¾ in., which increases the piston displacement from 285 to 381 cu. in. Aluminum alloy pistons are used instead of the former cast iron type. The new pistons have the characteristic Lynite split skirt.

The piston pin floats in both the piston bosses and the top end of the connecting rod, being retained by two steel snap rings in the outer ends of the piston bosses. The only change in the connecting rod itself is that a bronze bushing now is placed in the upper end. Previously the pin was clamped in the upper end of the rod, the bearing being in the piston bosses. In spite of the increased diameter, the weight of the reciprocating parts has been reduced by the new type pistons.

### Weights of Pistons Lighter

The weight of the pistons alone is 3.04 lb. lighter for the set of four and the weight of the whole assembly is 1.01 lb. lighter for each piston or 4.04 for the set of four. The further decrease in weight is accounted for by the fact that the new piston pins are hollow while the old ones are solid. The old pin weighed 0.32 lb. and the new pin weighs 0.25 lb. The compression ratio remains approximately the same as before. The pistons have three  $\frac{1}{8}$  in. rings all above the pin.

Another change is that made in the oil filler, which was previously mounted on top of the chain case. The removable plate on the front of the case now has been redesigned to include the oil filler, which is of larger diameter, allowing the oil to flow faster.

In addition to the changes in design, better balancing methods have been introduced at the factory, so that smoother running results. The maximum horsepower of the new engine is 35, against 29 for the old, at 2800 r.p.m. in both cases. The torque of the new engine is 87 lb. ft., against 75 lb. ft. for the old engine, both taken at 900 r.p.m. Changes in the engine were made without change in center distances of the cylinder.

### NEW AUBURN CAR COMING

AUBURN, IND., Dec. 3—Auburn Automobile Co. has confirmed the report that in the near future it will put on the market a new low-priced four-cylinder automobile. No details as to specifications of this car are available, and the company has not announced definitely when the new car will be ready.

## Reo Earns \$3,412,041 in 1924 Fiscal Year

**Surplus Increased to \$8,990,146  
and the Working Capital  
by \$525,000**

LANSING, Dec. 3—The twentieth annual report of the Reo Motor Car Co. shows the company netted \$3,412,041 during the fiscal year ending Aug. 31, 1924, and increased its surplus to \$8,990,146. There is a slight decrease in current assets and a drop of \$800,000 in current liabilities, the working capital being thereby increased by about \$525,000.

This good condition, says the report, insures the consummation of the company's manufacturing, merchandising and expansion requirements as they arise. During the year past the expansion of the company has been confined largely to the purchase of the former Duplex Truck Co. plant and property which has been converted into the bus manufacturing unit. Export sales are reported to have increased 100 per cent.

Current assets are shown at \$19,186,421, which includes \$4,561,737 cash on-hand and in banks; \$453,073 sight drafts outstanding; \$4,515,857 receivables less reserves, and \$9,655,752 inventories. Capital assets total \$7,655,155. Total assets are \$26,841,576, a gain of about \$400,000 over last year. Current liabilities are \$2,749,221.

Profits for the year are about \$2,000,000 under the total of \$5,603,478 earned last year, and reflect the slowing in business experienced during the year as compared to 1923. The accounts of Reo Motor Car Co., Inc., of New York, Chicago, California and Texas, and the Reo Michigan Sales, Inc., subsidiaries, are included in the general statement.

### Extra Dividend Declared

LANSING, MICH., Dec. 4—Reo Motor directors at their meeting declared the regular quarterly dividend of 1½ per cent and an extra of 3½ per cent, both payable Jan. 1 to stock of record Dec. 15.

### Northway Takes Over Rutenber Motor Co.

NATICK, MASS., Dec. 3—President P. W. Hansel of the Amalgamated Motor Corp. has given to the tax collector of Natick a check for \$70,344 in payment of all back taxes assessed against the Northway Motors Corp. This tax payment on the local plant clears up practically all the old indebtedness of the truck company. This makes about \$275,000 that has been discharged since the new interests took over control of the property less than a year ago.

Mr. Hansel stated that in concluding this transaction the Rutenber motor has been taken over as a part of the amalgamation, including physical assets amounting to more than \$600,000. It

## Business in Brief

*Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.*

Further increases in several important lines of trade were reported last week. Colder weather was partly responsible for the gains, but together with this was an increasing disposition on the part of buyers to relax their conservatism as regards orders for future requirements. Commodity prices moved irregularly, a noticeable feature being the upward movement in steel prices, following a year and a half of slow decline.

Car loadings in the week ended Nov. 15 numbered 1,015,704, compared with 994,504 in the preceding week and 992,050 in the corresponding period last year. This is the first time that loadings in the second week of November have exceeded 1,000,000 cars.

The latest private estimates of the cotton crop generally agree in placing the yield at more than 13,000,000 bales, some going as high as 13,400,000 bales, with 800,000 bales of linters and a carry-over of 4,000,000 bales.

Exports of wheat in October, according to preliminary figures, were the largest since August, 1921. The October total of 50,000,000 bushels, including the flour equivalent, brings the figure for the four months since July 1 to 118,000,000 bushels, which compares with a corresponding total of 73,900,000 bushels a year ago and 115,000,000 bushels in 1922.

Business failures in November were fewer than in any corresponding month since 1920, according to Dun's Review. They numbered 1653, against 1696 in October and 1704 in November of last year.

Bank debits to individual accounts reported by the Federal Reserve Board for the week ended Nov. 26 amounted to \$10,720,000, or 9.8 per cent less than in the preceding week, but 14.5 per cent more than in the corresponding period a year ago.

included the plant at Marion, Ind., \$150,000 worth of service parts, and 3686 finished motors, the latter to be used as the power plant for the new six-cylinder truck to be known as the Rocket, now being constructed at the Northway plant.

When the present supply of Rutenber motors is exhausted it is planned to continue building them at the Northway factory here.

## Rubber Firms Prepare to Resume Dividends

**Akron Companies Said to Be Getting in Shape to Make Back Payments**

AKRON, Dec. 3—After more than four years without payments on common, and, in some cases, preferred stocks, leading Akron rubber companies are again getting into a condition which probably will enable them to resume disbursements early next year.

Negotiations already have been started between bankers and directors of the Goodyear Tire & Rubber Co., with a view to paying off back dividends on the preferred. A total of \$18,222,288 in back payments will have accumulated on the \$65,079,600 7 per cent cumulative preferred by the end of this year.

Several plans have been discussed for readjusting Goodyear's capital structure and indications are that definite action will be taken along these lines in the near future.

With current earnings estimated at \$9 a share on the common, the B. F. Goodrich Co. is expected to be in a position to resume dividends on that issue some time in 1925. Preferred dividends are being paid at the rate of 7 per cent annually.

Only \$2 a share in back payments on preferred stock remains to be paid before the Miller Rubber Co. can restore common stock dividends. The company is said to be earning close to \$20 a share on its common stock, and is in strong financial position.

Earnings of the Firestone Tire & Rubber Co. are also about \$20 a share on the common stock, and it is expected that the present dividend of \$4 annually will be increased in 1925.

Owing to unusually large profits this year, it is reported that both the General Tire & Rubber Co. and the India Tire & Rubber Co. will pay extra stock dividends in the near future. Although comparatively small companies, they have an uninterrupted dividend record during the past few years, while the big companies were forced to pass dividends.

## Dixie Body Co. Sold; Plant to Be Enlarged

MEMPHIS, TENN., Dec. 3—Al Goldfarb and Julius Lewis have purchased the Dixie Auto Body Co. plant and business from John C. Dix, Son & Co. They announce that the plant will be enlarged and new machinery purchased. Mr. Goldfarb retains controlling interest.

The business has been in existence in Memphis for many years and the original name will be retained. The new firm contemplates the immediate construction of a new building. An enameling department will be added and the factory will turn out special coach bodies.

## Distribution Costs to Be Investigated

### U. S. Chamber Sponsors Meeting to Attack Problem from New Viewpoint

WASHINGTON, D. C., Dec. 3—With a view to cutting down costs of distribution, a conference of retail, wholesale and manufacturing interests will be held in this city some time in January under the auspices of the Chamber of Commerce of the United States. The conference will formulate a program of investigation to be carried on by representative committees of business men and economists.

The recommendations of these committees, each dealing with a different phase of the inquiry, will form the basis of discussion at a final conference representing all branches of commercial activity involved in distribution, and a definite course of action to reduce costs it is hoped will be evolved. The investigation will go farther than did that of the Joint Commission of Agricultural Inquiry, which, while taking up many facts regarding distribution, did not touch a number of the important elements of distribution.

This is said to be the first concerted attack upon the problem of distribution that has been made from the point of view of the distributor, the field of inquiry thus far for the most part being unexplored.

The inquiry will take up problems arising in the distribution of all commodities from producer to ultimate consumer, and will consider all factors that figure in the spread of price.

### Goodyear Buys Plant of Marathon Company

AKRON, Dec. 3—The Goodyear Tire & Rubber Co. has purchased the plant of the Marathon Tire & Rubber Co. at Cuyahoga Falls, near here, it has been announced by P. W. Litchfield, vice-president. This plant, which has been shut down for the last six months, has a capacity of 1000 tires a day.

Marathon went into receivership last February. About a month ago the newly organized Flex-Hyde Rubber Co. bought the plant, later selling out to Goodyear. The latter company previously had purchased the good will and patents of Marathon.

### C. G. Spring & Bumper Co. Increases Operations

DETROIT, Dec. 3—C. G. Spring & Bumper Co. is now in full operation in its Chicago plant, and has discontinued all operations at Kalamazoo. Manufacturing centers of the company now are at Detroit and Chicago, with some manufacturing also being carried out at Cleveland.

The company reports September and October sales considerably in advance of the same period a year ago and prospects are declared excellent for a steady demand. Increased specifications have been received from car manufacturers and the demand from jobbers in Middle Western States is growing.

The regular quarterly preferred dividend of 2 per cent was declared, payable Jan. 1 to stockholders as of Dec. 24.

### Harvester Company Adds to Its Truck Production

SPRINGFIELD, OHIO, Dec. 3—The Springfield works of The International Harvester Co. reports production at 35 high speed trucks a day.

The company now has 1300 men employed at the Springfield works. Orders have been received within the last few days from Australia, Sweden and Denmark. The increasing of the force was due to the orders from foreign countries and the adding of the motor bus line to the local products.

Hereafter the Springfield works will confine its efforts to the manufacture of motor trucks and motor buses. The Ohio Steel Foundry Co. is assisting the company in turning out castings.

### 1924 Tire Business Best Since Boom Period

AKRON, Dec. 3—This year has been the most prosperous for the tire industry since the boom period of 1919-20, according to the annual report of the Akron Chamber of Commerce.

Annual output of 25 rubber companies in this district for the fiscal year ending Nov. 1 was \$364,552,564, as compared with \$334,861,000 in 1923 and \$266,935,296 in 1922. At the same time there was a decline in capitalization of the rubber companies from \$325,965,000 in 1923 to \$284,478,258 reported this year.

The annual payroll of the rubber industry here also exceeded that of the last three years, amounting to \$70,197,554 in 1924, as compared with \$64,637,000 in 1923 and \$64,176,299 in 1922. Persons employed in the rubber factories this year totaled 43,146.

It is estimated that 30,000,000 tires will be produced in the Akron district, and 60,000,000 in the entire United States this year.

W. O. Rutherford, president of the Rubber Association of America and vice-president of the B. F. Goodrich Co., estimated an increase of 20 per cent in tire production in 1925.

### HUPP NOVEMBER SHIPMENTS

DETROIT, Dec. 3—Hupp Motor Car Corp. reports shipping 1026 cars in November, compared with 1537 in October and 1901 in November of last year. For the 11 months of the year shipments total 28,289. The tentative schedule for December calls for the production of 2500 four and eight cylinder cars, a substantial part of the output to consist of eight-cylinder models.

## Experts Talk Over Speeding of Traffic

### It Is Stated at Meeting That Problem Has Grown to Be One for All States

NEW YORK, Dec. 3—What is being done and can be done to keep traffic moving and serve the best interests of communities was discussed at the annual meeting of the National Highway Traffic Association meeting at the new Automobile Club of America quarters in New York yesterday.

In opening the meeting David Beecroft, vice-president, brought out the fact that traffic control was no longer a problem of individual isolated cities, but that it now concerned State authorities and is being given serious consideration by them. Traffic experts and members of the National Highway Traffic Association went into questions and various phases of traffic planning and of remedying immediate and future congestion.

George H. Pride, chairman of the National Committee on Weights, Dimensions and Speeds of Tractors, Trailers and Semi-Trailers, recommended that maximum width be limited to 96 in., maximum height to 12 ft. 6 in., maximum length of tractor and semi-trailer combined to 40 ft., and maximum length of tractor and four-wheel trailer to 60 ft. He further recommended that no general maximum weight be stipulated.

Arthur S. Tuttle, chief engineer of the Board of Estimate and Apportionment, New York City, said that the estimated cost of arcading buildings was \$250 a front foot and that the cost of each mile would range between \$8,000,000 and \$12,000,000.

### Widening of Streets Proposed

Methods of increasing the traffic capacity of streets brought out arguments for and against widening streets, arcading buildings and overhead sidewalks. It developed that four or six lines of traffic made faster travel in congested districts than eight or ten lines.

Professor Lewis W. McIntyre of the University of Pittsburgh outlined a traffic control system in which the management should be in the hands of engineers and the control in the hands of a specially selected police force.

At the evening session Ernest P. Goodrich, vice-president of the Technical Advisory Corp., outlined methods of forecasting future traffic.

Russell Huffman, secretary of the Motor Vehicle Conference Committee, gave an address on compulsory liability insurance, in which he summed up the arguments for and against this measure. The law requiring taxicabs to provide insurance or a bond in New York, it was pointed out in the discussion which followed, was far from an unqualified success.

## FINANCIAL NOTES

**Durant Corp.** of New York has made application in Richmond, Va., to sell \$40,000 investment trust participating bonds and units, according to William H. Shands, director of the securities division of the Virginia State Corporation Commission. The bonds represent a 1/10 interest and the units a 1/100 interest in a group of securities deposited with the Liberty National Bank of New York. Each group consists of one share of the common stock of the United States Steel Corp., the American Telegraph & Telephone Co., American Tobacco Co., American Locomotive Co., Westinghouse Electric & Manufacturing Co., Endicott-Johnson Corp. and the Texas Co. The Durant plan is to allow a margin of approximately 15 per cent for selling the securities.

**Stromberg Carburetor of America, Inc.**, declared a quarterly dividend of \$1.50, payable Jan. 2 to stock of record Dec. 5, thus placing the stock on a \$6 annual basis. Previous quarterly payments have been \$2. The company's report for the quarter ended Sept. 30, 1924, shows a net profit of \$99,359, after expenses and taxes, equivalent to \$1.32 on the outstanding 75,000 shares of no par value capital stock, compared with \$166,404, or \$2.21 a share in the preceding quarter, and \$189,761, or \$2.53 a share, in the third quarter of 1923. Net profits for the nine months ended Sept. 30 totaled \$470,067, equal to \$6.26 a share, against \$810,731, or \$10.80 a share, in 1923.

**United Manufacturing & Distributing Co.** receivers, announce that during the period of operation from Sept. 12 to Oct. 31 shipments totaled \$110,030. Sundry purchases were made and the inventory Oct. 31 was reduced by approximately \$18,000. After all expenses of operation, but not for depreciation, interests, taxes, bad debts or receivers' compensation, an operating surplus of \$9,662 is shown. In addition finished products on hand as of Oct. 31 approximate \$25,000, which is included in the total inventory of \$78,000. On Sept. 12 finished products included in the inventory totaled \$20,000.

**American La France Fire Engine Co., Inc.**, for the nine months ended Sept. 30, 1924, reports net profits of \$573,835, after depreciation, interest and Federal taxes, equivalent after preferred dividends to \$1.22 a share on the \$3,450,000 outstanding common stock of \$10 par value. Consolidated balance sheet as of Sept. 30, 1924, shows cash of \$429,264; notes and warrants receivable, \$943,935; accounts receivable, \$1,259,405; notes payable, \$400,000 and accounts payable, \$503,087.

**Wickwire-Spencer Steel Corp.** for the quarter ended Sept. 30, 1924, shows a net loss of \$249,989, after interest charges, depreciation, etc., compared with an operating profit of \$351,474 before bond interest and depreciation, in the third quarter of 1923. Combined income account of Wickwire-Spencer Steel Corp. and American Wire Fabric Corp. is included in these figures.

**Electric Auto-Lite Co.** of Toledo, Ohio, has called for redemption, at the Irving Bank-Columbia Trust Co., New York, on Dec. 31, 1924, at 105 and accrued interest, all of its outstanding 7½ per cent sinking fund gold bonds dated July 1, 1922.

**C. G. Spring & Bumper Co.** declared the regular quarterly dividend of 2 per cent on the preferred stock, payable Jan. 1, 1925, to holders of record Dec. 24, 1924.

**Pierce-Arrow Motor Car Co.** has declared the regular quarterly prior preferred dividend of \$2 a share, payable Jan. 1 to stock of record Dec. 15.

**Yale & Towne Manufacturing Co.** has declared the regular quarterly dividend of \$1 a share, payable Jan. 2 to holders of record Dec. 10.

**Electric Auto-Lite Co.** has declared the regular quarterly dividend of \$1.50 on its common, payable Jan. 2 to stock of record Dec. 15.

**Autocar Co.** has declared a quarterly dividend of 2 per cent on the preferred stock, payable Dec. 15 to holders of record Dec. 5.

### A. C. BARBER DEAD

**CHICAGO,** Dec. 3—Albert C. Barber, president of the Overland Motor Co. of Chicago and formerly general sales man-

ager of Willys-Overland, Inc., died here of heart failure.

Mr. Barber was well known in the trade, having been at one time manager of the West Central Division for the Overland company, with headquarters at Moline, Ill.

Prior to his association with Willys-Overland, he was general sales manager of the Moline Plow Co.

### Yellow Cab Decides to Conserve Assets

**CHICAGO,** Dec. 3—Actuated, according to President John Hertz, by a desire to conserve earnings in order to take care of expected expansion during the coming year, the Yellow Cab Manufacturing Co. has decided to reduce its dividends for 1925 from \$5 to \$2.52 basis. The directors declared monthly dividends of 21 cents payable Feb. 2, March 2 and April 1, 1925, to stock of record the 20th day of the preceding month. Previous payments have been 41 2/3 cents a share monthly.

At the same time it was announced that earnings for October amounted to \$201,000 and that the earnings available for dividends for the first 10 months of 1924 were \$2,542,000, which is equivalent to dividend requirements. It was added that earnings for November had been running at a ratio of about \$200,000. The company has no indebtedness of any kind, excepting current bills, which are discounted monthly, it was stated.

Mr. Hertz further stated:

I anticipate that we will earn much more than our \$2.52 dividend next year on Yellow Manufacturing stock, but we won't pay a cent more than that. Surplus earnings from now on are going to be ploughed back into the company. We are going to do a big business, particularly in the manufacture of buses. We are getting big orders every day and I have every reason to believe that this end of our business is going to keep our factories extremely busy next year. Also we do a very big taxicab business, to say nothing of the sale of trucks and drive-it-yourself taxicabs, both of which lines have started out promisingly.

### Goodyear Adds 50,000 Spindles by Purchase

**AKRON,** Dec. 3—Capacity of cotton mills producing tire yarn and fabric for automobile tire factories operated by the Goodyear Tire & Rubber Co. at Akron, Los Angeles and in Canada has been increased by 50,000 spindles as a result of the acquisition of the Rotch mills at New Bedford, Mass., Goodyear officials announce.

It is stated that this purchase will take care of a large part, but not all, of the company's fabric requirements. Officials point out, however, that their increasing control over raw materials is enabling them to add to the efficiency and lower the cost of their manufacturing operations.

Goodyear now owns large cotton plantations in Arizona and has crude rubber plantations in foreign countries.

## M. A. M. A. Improves Its Credit Service

### Expansion and Simplification, Announced at Cleveland, Put Into Effect

**NEW YORK,** Dec. 3—The improvements in the credit service of the Motor and Accessory Manufacturers' Association which were announced at the October convention in Cleveland are now being put into effect. An expansion and at the same time a simplification of the reporting service on jobbers is being rapidly whirled into shape. Under the new plan the service will contain information for the sales department, as well as for the credit department.

Simultaneously the service both on manufacturers and jobbers is being strengthened by the opening of a field office in Detroit in charge of H. J. Quirk. Mr. Quirk, as an active credit man in the automotive field, has had long experience with both manufacturers' and jobbers' credits. He was formerly assistant treasurer of the Standard Steel & Bearings Co., Inc., with his headquarters first in Philadelphia and later in Plainville, Conn. The Standard company is a subsidiary of the Marlin-Rockwell Corp. of New York. The location of the new M.A.M.A. field office in Detroit will be announced shortly and Mr. Quirk will assume his duties early in December.

### Jobber Credit Service

M. L. Heminway, general manager, and A. H. Fagan, credit manager of the M.A.M.A., have been at work for several weeks at New York headquarters on the improvement of the jobber credit service. As rapidly as possible the reporting service, which has covered about 1400 general and specialty jobbers in the automotive field, is being extended to include replacement parts jobbers. In this work the association has the cooperation of more than 400 members, manufacturers in the various divisions of the parts industry.

A new system of reporting has been worked out which will save time for manufacturers using it. Under this system the personnel, statement of financial condition and description of the business of the jobber will be carried as formerly, but the credit experiences of manufacturers with the jobbing account, instead of being merely listed in detail, will be summarized in tabular form for quick reference.

### Summaries to Be Tabulated

These summaries of credit experiences of jobbers are already going out to the association membership. As soon as possible they will be tabulated on cards which will be sent to the membership, eventually providing them with an index file of the jobbers of the country covering both credit and sales data.

## METAL MARKETS

There has been no lessening of the enthusiasm with which the recent improvement in the steel market has been acclaimed from the start. It is becoming more and more evident, however, that the volume of demand must broaden considerably before there will be solid ground for the sanguine confidence which prevails. With the possible exception of a fair increase in structural steel contracts and somewhat more buying by railroad equipment interests, there has been no indication so far of a marked growth in orders placed.

Much of the steel that will be shipped this month will not be consumed until January, having been bought by way of protection against a possible advance in prices. While the rate of operation has improved, the steel industry is not yet employing three-quarters of capacity. It is quite possible that the second half of this month will bring out enough first quarter 1925 business to impart some real snap to the market, but up to now the best that can be said for conditions is that they give reasonable promise of a slowly rising growth of steel consumption and purchases after the holiday season and inventory period are out of the way.

The full-finished automobile sheet market seems to be fairly well established on the 47.5c. price basis recently promulgated by the leading interest, but several weeks before that announced by one of the independents. In the strip steel market, especially in the hot-rolled department, competition continues keen, and there are rumors of recently announced prices being shaded, especially on narrow strips.

On the whole it may be said that the \$2 and \$3 per ton advance in prices recently announced has so far had relatively slight effect on the volume of orders. A few consumers saw in it a possible fore-runner of further advances and placed a moderate amount of orders at the prices in vogue before the advance, everybody having had ample notice and time to do this.

Certain it is that the advance did not drive any buyers out of the market. It was merely a readjustment of prices on a basis more nearly in keeping with production costs of most mills.

Whether there will be a further advance in response to broader and more urgent demand depends upon developments during the next six weeks.

**Pig Iron.**—Following its recent activity, the market for foundry and malleable irons seems to have quieted down. Asking prices range from \$20.50 to \$22. valley. Advances in coke prices furnish a natural prop to pig iron quotations, all the more so as wage increases to coke oven operatives are looked for, and these are automatically passed on to buyers by a clause in all sales contracts.

**Aluminum.**—Market conditions show no change. Advices from France emphasize the fact that whereas before the war, France was able to export one-third of its output after supplying its home needs, it has now become an importing country. French consumers favor a reduction in import duties, and producers are speeding up plant enlargements to cope with the situation. Of late, there have been no offerings of French aluminum in the New York market, and this is explained by the conditions previously set forth.

**Copper.**—Domestic demand has turned very good and it looks as though the red metal had definitely turned the corner. Manufacturers of copper and brass products report much better inquiry from automotive consumers.

## Ford Builds Largest Electric Locomotive

DETROIT, Dec. 3.—The largest and most powerful electric locomotive in the world is being built for use by the Detroit, Toledo & Ironton Railroad at the Highland Park plant of the Ford Motor Co. When completed it will weigh 340 tons and will be 117 ft. long, 15 ft. high and 10 ft. wide. Motive power will be supplied by 16 250 hp. motors connected to a like number of driving wheels, which

will give it a tractive capacity of 150 or more loaded box cars.

The new locomotive is designed for freight service and will have a normal running speed of 17 m.p.h., with a maximum of 35 m.p.h. One of its unique features is that it carries its own converters, thus eliminating the need for sub-stations along the route to rectify and step down the alternating current supply. Another unusual feature is that it will operate on 25 cycle power supplied at 22,000 volts, which voltage is twice as large as has been used heretofore in this country. Provision has been made for regenerative braking.

The mechanical parts of the new locomotive are being designed and built by the Ford Motor Co. The electrical equipment is being furnished by the Westinghouse Electric & Manufacturing Co.

## INDUSTRIAL NOTES

**Metropolitan Body Co.**, manufacturer of Metro cabs and combination dump bodies, has been appointed Eastern distributor for the Erie Motor truck power winches made by the Erie Hoist Co., Erie, Pa. The Metropolitan company has a factory and office in Bridgeport, Conn., a New York factory branch and office in Long Island City and a factory branch in Philadelphia.

## Credentials Prepared for Show Trade Days

NEW YORK, Dec. 3.—Credentials for the trade days which will usher in the national shows at New York and Chicago will be issued about the middle of this month to executives in all lines of the industry, inclusive of passenger cars, truck, parts and body makers, jobbers, car distributors and dealers and owners of all establishments catering to the automotive trade in the two metropolitan areas.

The credentials will admit on the Friday and Saturday preceding the opening of both shows, up to 7 o'clock Saturday evening, the hour the public is admitted.

It has been necessary at all previous national shows for the trade to take its chance with the general public in transacting business during the week of the displays. Under the new plan the engineers, production men and purchasing agents will be free to show and examine products and to book orders without interference from the crowds that are always in attendance at the expositions.

Several of the more important factories that have been in the habit of entertaining their dealers during the regular week of the national show will advance their dealer luncheons and dinners this year to one of the trade days. It seems probable, therefore, that the bulk of buying of accessories and complete cars for the spring and summer demand will be effected in the two days, instead of being spread over the entire week as in the past.

Because of the purchasing power that will be represented during the trade days the display of parts and accessories will probably set a new record.

## Committee to Urge Uniform Traffic Laws

### Repeal of Unreasonable Legislation Also to Be Recommended at Hoover Conference

WASHINGTON, Dec. 3.—Repeal of unreasonable automobile laws and more rigid enforcement of sensible and practical traffic regulations, uniform speed regulations, uniform traffic regulations as far as possible and a higher mental and physical test for automobile drivers are the outstanding features of the special report which will be made by the Committee on Traffic Control to the Hoover National Conference on Street and Highway Safety, meeting here for a three-day session beginning Dec. 15.

The recommendations of the committee, which is headed by Roy F. Britton, president of the Automobile Club of Missouri, are briefly summarized as follows:

### Want Pedestrians Regulated

Speed regulations should be directed primarily at reckless driving and should be uniform throughout the country. Communities should be empowered to fix speed limit zones, but should be required to mark the boundaries of such zones plainly, and should be prohibited from establishing a speed limit lower than 15 miles per hour. Speed in excess of 35 miles per hour in rural areas should be considered, prima facie, reckless.

The overtaking of moving vehicles on sharp curves, approaching hillcrests, at intersections or at railroad crossings should be prohibited.

Automobiles should not be permitted to park on any part of a traveled portion of a rural highway.

A single cautionary signal, made by extending the arm well outside the vehicle, should be uniform in all States and is recommended as being preferable to the more complex code of upward, straight out and downward indicating left or right hand turns. The present signal system as now practised means anything from flicking ashes to a well intended but garbled signal and should be abolished.

Vehicles should not be permitted to exceed a speed of 15 miles per hour when approaching within 100 ft. of a railroad crossing.

In cities pedestrians should be required to keep within the boundaries of designated safety zones and crossing places. Motorists should be required to accord pedestrians safe and dignified use of such safety zones and crossing places.

### Seeks Impounding Law

The impounding of automobiles, suspension of the driver's license and a more rigid license law are recommended by the Special Committee on Insurance of the National Conference on Street and Highway Safety in its report.

The committee will also urge a uniform automobile certification and registration law, pointing out that drivers of stolen cars are responsible for a large percentage of accidents, and that to make the laws of certification more rigid will be to minimize thefts and reckless driving.

# Calendar

## SHOWS

- Dec. 5-21—Paris, France, Ninth Annual Exhibition for Aeronautics, Grand Palais of the Champs-Elysees.  
 Dec. 6—Cordoba, Argentina, Second Annual Automobile Show, under the direction of the Cordoba Automobil Club.  
 Dec. 6-17—Brussels, Belgium, Annual Automobile Show, called "salon de Bruxelles," Palais du Cinquantenaire.  
 Jan. 2-10—New York, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Bronx Armory. Open to the public except on Jan. 2 and 3 which are trade days.  
 Jan. 17-24—Cleveland, Annual Automobile Show.  
 Jan. 23-31—Chicago, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Coliseum and First Regiment Armory. Open to the public except on Jan. 23 and 24 which are trade days.  
 Jan. 25-31—Chicago Annual Automobile Salon.

Feb. 7-14—Kansas City, Mo., Annual Automobile Show.  
 Feb. 21-28—San Francisco, Pacific Annual Automobile Show.

March 7-14—Boston, Twenty-third Annual Automobile Show.  
 March 20-29—Geneva, Switzerland, Second Swiss International Motor Exhibition.  
 April 1-17—Sydney, Australia, Royal Agricultural Show. Embraces automobile exhibits.

April 22-May 7—Melbourne, Australia, International Automobile Show, under the auspices of the Chamber of Automotive Industries, in conjunction with the Royal Automobile Club of Victoria.

June—Rio de Janeiro, Brazil, Rio Automobile Show, originally scheduled for October, 1924, but postponed for more extensive arrangements.

## CONVENTIONS

- Dec. 8-9—Boston, New England Motor Transport Conference, Copley Plaza Hotel.

Dec. 9-11—Fifth Annual meeting, American Petroleum Institute, Texas Hotel, Fort Worth, Tex.

Jan. 5—New York, Convention under the auspices of the National Automobile Dealers Association, Hotel Commodore.

Jan. 5-9—Chicago, Road Show and Convention of the American Road Builders Association.

Jan. 26-29—Chicago, Eighth Annual Convention of the National Automobile Dealers Association, Hotel LaSalle.

June 22-27—Summer convention of the Automotive Equipment Association at the Broadmoor Hotel, Colorado Springs, Colo.

## S. A. E. MEETINGS

Dec. 11—Indiana Section, Aviation Development, Major E. L. Hoffman; Superchargers, Dr. F. A. Moss.

Dec. 15—Cleveland Section, Development of Clutches, Ernest C. Wemp, Long Manufacturing Co., Old Colony Club, Hotel Cleveland.

Jan. 15—Indiana Section, Lubrication and Crank Case Dilution, S. W. Sparrow of the U. S. Bureau of Standards.

Jan. 19—Cleveland Section, Preparation of Fuel Charges and Detonation, Arthur H. Denison, Weger Motor Co., Old Colony Club, Hotel Cleveland.

Jan. 20-23—S. A. E. Annual Meeting, Detroit.

Feb.—Indiana Section, Automobile Finishes.

Feb. 16—Cleveland Section, Electrical Instruments and Measuring of Chassis Tests by Means of Them, J. H. Hunt, General Motors Research Corp., Old Colony Club, Cleveland.

Mar.—Indiana Section Developments in Transmission.

Mar. 16—Cleveland Section, Road and Riding Ability, Harry Horning, Waukesha Motor Co., Old Colony Club, Hotel Cleveland.

Apr. 9—Indiana Section, Talk by F. E. Hunt, head of electrical division, General Motors Research Corp.

## High-Priced Sales Gain in Two States

CHICAGO, Dec. 3—Total sales of new passenger cars in both Illinois and Indiana, as revealed by registration figures, showed a loss of 8 per cent for October, as compared with the preceding month. All classes show losses in both States, with the exception of the high-priced cars in Illinois, which gain 20 per cent, and medium and high-priced vehicles in Indiana, which show gains of 3 and 11 per cent, respectively.

The greatest losses are shown by the low-priced cars (excluding Fords), the decreases being 17 per cent for Illinois and 15 per cent for Indiana.

The following table indicates the percentage of loss or gain for each class for both Illinois and Indiana, the basis of comparison being the month of October, as against September:

	Illinois	Indiana
	Loss	Low
Fords	13%	Excl. Fords
Low, excl. Fords	17%	Fords
Medium	0.6%	Med. Price
High	20%*	High Price
Total	8%	

\* Gain

	Indiana
	Loss
Fords	14%
Low, excl. Fords	15%
Medium	3%*
High	11%*
Total	8%

\* Gain

Following are the detailed figures for the first ten months of 1924:

	Illinois			
	Low	Excl.	Med.	High
Month	Fords	Fords	Price	Price
January	4,101	2,187	5,871	1,013
February	3,201	1,724	3,762	567
March	5,798	2,396	4,761	690
April	12,461	4,805	8,073	964
May	10,779	4,234	7,151	862
June	6,626	2,539	4,675	503

## Eastern Class Rate Report Prepared by Committee

NEW YORK, Dec. 3—Eastern class rate revision will receive further study and discussion at the monthly meeting of traffic managers of the National Automobile Chamber of Commerce in the General Motors Building, Detroit, Dec. 11. At this meeting the special committee will make its report and submit data showing the effect these rates would have on the industry's transportation charges.

The proposal submitted by railroads to the Interstate Commerce Commission contains extensive advances. According to expressions at meetings of shippers during the past month, these advances will be strongly resisted by all commercial interests and chambers of commerce.

The Interstate Commerce Commission has announced that hearings will begin in Washington on February 4.

## Du Pont Starts New Plans for Employees

WILMINGTON, DEL., Dec. 3—E. I. du Pont de Nemours & Co. has announced the inauguration of a savings plan and a new stock investment plan for its employees, the two plans being substituted for others which have been in effect since 1909.

Under the new savings plan employees whose earnings do not exceed \$3,000 a year may subscribe for "du Pont Thrift Certificates" up to the value of 20 per cent of their annual salary, but not exceeding \$500 at any one time. The certificates will bear 6 per cent interest, which will become part of the principal semi-annually until the value of the certificates reaches \$500.

The stock investment plan provides that employees who are not directors may subscribe for the company's 8 per cent cumulative debenture stock at \$92 a share. The subscriptions are limited to 20 per cent of the employee's annual salary, but in no case to more than 10 shares, and the company reserves the right to accept subscriptions for the coming year to not more than 6000 shares.

Under this plan subscribers will receive the regular dividends, plus \$3 a share for five years, after full payment has been made. In case of partial payment, interest at the rate of 8 per cent will be allowed until the full amount has been paid in. Provision is made under this plan for converting holdings under the 1921-24 plan whereby such holdings will be given the full benefit of the extra \$3 a share payment.

Many employees have taken advantage of the stock subscription plans heretofore in force.